

Commercial Refrigeration & Air Conditioning

August 1957

a monthly direct mail program

that combines pretty girls

and a touch of humor

with a timely sales message

has produced record sales

for one cooling contractor

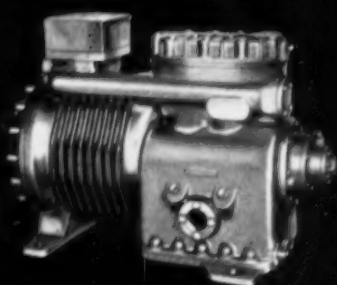
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ANN ARBOR MICH
313 N FIRST ST
UNIVERSITY MICROFILMS
STEVEN'S NICE

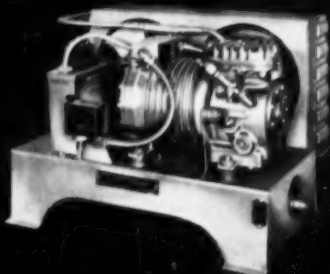
FOR DETAILS YOU CAN COPY, SEE PAGE 38

Circulation now over 30,000

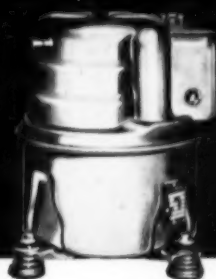




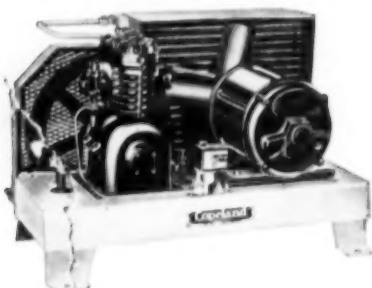
COPELAMETIC MOTOR - COMPRESSORS



COPELAMETIC CONDENSING UNITS



COPELAWELED MOTOR - COMPRESSOR



BELT-DRIVEN CONDENSING UNITS

SINCE 1918



Copeland
REFRIGERATION CORPORATION

Sidney, Ohio

WAVY

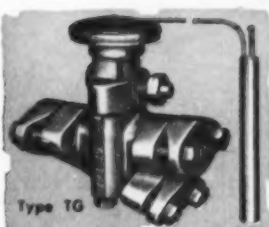
Manufacturers

Copeland's distribution policy — backed by products of exceptional quality and 100% dependable service — is a sure-fire click. It opens the door to added volume, earnings and all-around satisfaction. Consider these facts:

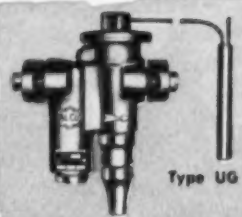
- field sales stocks of motor-compressors and condensing units valued at close to \$4,000,000.
- more than 25,000 sales-conscious dealers from coast to coast, working closely with our nearly 150 wholesalers.
- in-or-out-of-warranty service protection which builds sales for wholesalers of new parts and replacement equipment.
- a potent sales help for manufacturers hot after their share of the booming refrigeration and air conditioning market.
- speeded-up service and unexcelled quality, thanks to Copeland's spanking-new factory.

Depend on Copeland . . . always a safe bet to deliver.

Circle No. 1 on Reader Service Card



Type TG



Type UG



Type M5



Type M91F



Type EPR



Type E



J56



Type HK

PAGES

NCY NTROLS

new life
iciency—
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ansion
Switches
Float Valves

INSTALL ALCO—THE SYSTEM SHOWS THE DIFFERENCE.

WRITE FOR ALCO'S FREE CATALOG No. 20



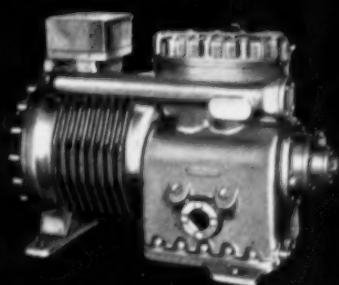
BUY QUALITY—BUY ALCO

ALCO VALVE CO.

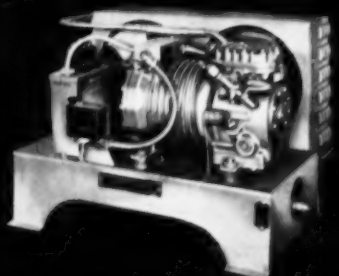
843 KINGSLAND AVE. • ST. LOUIS 5, MO.

see your ALCO wholesaler

THE ONE COMPLETE LINE OF Thermostatic Expansion Valves, Refrigerant Distributors, Solenoid Valves,
REFRIGERANT CONTROLS Suction Line Regulators, Flooded Evaporator Controls and Reversing Valves.



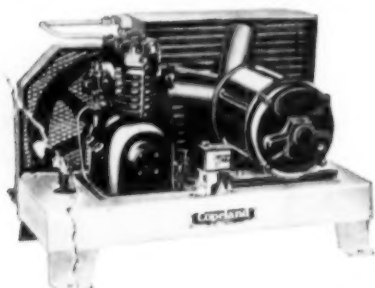
COPELAMETIC MOTOR - COMPRESSORS



COPELAMETIC CONDENSING UNITS



COPELAWELED MOTOR - COMPRESSORS



BELT-DRIVEN CONDENSING UNITS



THE RIGHT PROFIT COMBINATION for wholesalers, dealers, manufacturers

Copeland's distribution policy — backed by products of exceptional quality and 100% dependable service — is a sure-fire click. It opens the door to added volume, earnings and all-around satisfaction. Consider these facts:

- field sales stocks of motor-compressors and condensing units valued at close to \$4,000,000.
- more than 25,000 sales-conscious dealers from coast to coast, working closely with our nearly 150 wholesalers.
- in-or-out-of-warranty service protection which builds sales for wholesalers of new parts and replacement equipment.
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- speeded-up service and unexcelled quality, thanks to Copeland's spanking-new factory.

Depend on Copeland . . . always a safe bet to deliver.

SINCE 1918



Copeland
REFRIGERATION CORPORATION

Sidney, Ohio

Circle No. 1 on Reader Service Card



GET TOP FREEZING EFFICIENCY REACH FOR **ALCO** AMMONIA CONTROLS

Rugged, yet sensitive Alco Ammonia Controls put new life into sluggish refrigeration systems. Increase freezing efficiency—reduce operating and maintenance costs.

There's an Alco Control for every ammonia application, in all standard capacities:

Thermo Expansion	Automatic Expansion
Solenoids	Float Switches
EPRs	Float Valves

INSTALL ALCO—THE SYSTEM SHOWS THE DIFFERENCE.

WRITE FOR ALCO'S FREE CATALOG No. 20



BUY QUALITY—BUY ALCO

ALCO VALVE CO.

843 KINGSLAND AVE. • ST. LOUIS 5, MO.

see your **ALCO** wholesaler

THE ONE COMPLETE LINE OF
REFRIGERANT CONTROLS

Thermostatic Expansion Valves, Refrigerant Distributors, Solenoid Valves,
Suction Line Regulators, Flooded Evaporator Controls and Reversing Valves.

Circle No. 3 on Reader Service Card

A detailed illustration of a hand in a suit sleeve holding a dark, arrow-shaped tag. The tag features the word "BRUNNER" in large, bold, white capital letters, with "SINCE 1906" in smaller white capital letters below it. A dashed line extends from the tag towards the left.

BRUNNER
SINCE 1906

DIVISION OF

DUNHAM-BUSH

*167 Years of
Heat
Transfer
Experience*

Brunner, now a Division of Dunham-Bush, offers you dependability backed by the amazing record of 167 years of heat transfer experience. That's the actual time members of the Dunham-Bush family have been serving the air conditioning, refrigeration and heating industries.

Well known Brunner Condensing Units offer you the right size equipment for every job . . . an increased coast-to-coast supply depot system with complete stocks and parts.

There's a Brunner and Dunham-Bush sales engineer near your town, ever available to assist you in solving your problems . . . preventing problems. His valuable assistance is backed by 167 years of company assistance.

May we send him your way for a courtesy call?

BRUNNER DIVISION

DUNHAM-BUSH, INC.

UTICA, NEW YORK

A smaller version of the Brunner logo tag, featuring the word "BRUNNER" in large, bold, white capital letters, with "SINCE 1906" in smaller white capital letters below it.

BRUNNER
SINCE 1906

Commercial Refrigeration & Air Conditioning

AUGUST 1957 • Vol. 14 • No. 8

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BPA

• Copyright 1957 by The Industrial Publishing Corporation, Cleveland, Ohio.

• Accepted as Controlled Circulation Publication at St. Joseph, Michigan. Please return 3579 forms to 800 Caxton Bldg., 812 Huron Road, Cleveland 15, Ohio.

38/ Cheesecake and Chuckles

... that's the foolproof formula employed by this southern Illinois dealer to make sure his steady stream of direct mail pieces are read—and remembered.

40/ "Operation Clean-Up"

A two-step approach was employed by this Pittsburgh contractor to consolidate and systematize the patchwork refrigeration and air conditioning facilities of a local restaurant.

42/ Cash In on the Farm Market

More and more farmers across the country are converting from can cooling to bulk cooling of milk, opening up inviting new profit possibilities for commercial refrigeration dealers serving rural areas.

43/ Freezing Is the Answer

... to the production problems of this boom town bakery. \$5000 worth of new low temperature equipment makes it possible for the shop to meet customer demands.

45/ If standard fixtures won't fit ... Improvise!

This contractor solved a drug store's bottled beverage cooling problem by revamping an old back bar refrigerator to fit the only available merchandising space.

AIR CONDITIONING SECTION

66/ Specialize and Succeed

A Kansas City contractor buttons up the theater air conditioning market with a three-pronged merchandising program aimed directly at owners of motion picture houses in his territory.

68/ Booster Pump Saved 90%

... of anticipated new equipment costs when a Brooklyn bank building expanded its air conditioning system.

69/ Put the Doctor on the Payroll

That, in effect, is what one enterprising dealer of residential air conditioning did when he enlisted the aid of an allergy specialist in turning patients into prospects.

70/ Filter Service Plans Build Equipment Sales

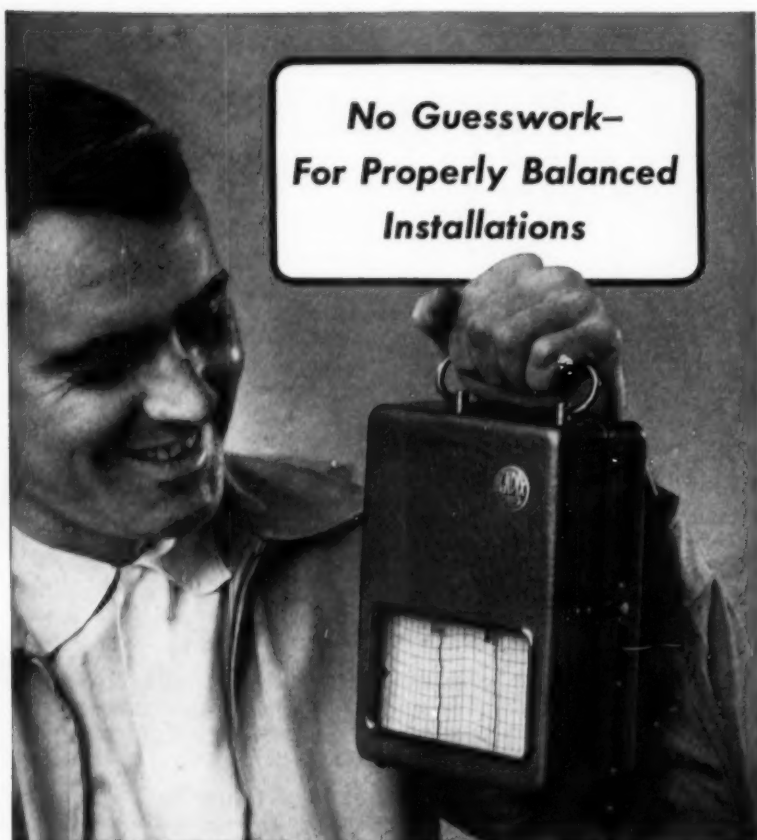
Looking for a way to boost air conditioning sales, or maybe just for a profitable sideline? Here's some interesting arithmetic that may help you achieve either—or both.

73/ "It Isn't the Heat—It's the Humidity!"

That's a familiar way of explaining why summer weather sometimes is so uncomfortable—but it's not necessarily true. Actually, it might be either or both, for a lot depends upon the proper combination of the two.

77/ Who Says We're Lousy Salesmen?

Three contractor-dealers voice their spirited opinions on the quality of salesmanship in the air conditioning industry today.



PORTABLE TEMPERATURE-HUMIDITY RECORDER HELPS YOU SELL, SERVICE AND INSTALL!

There's no need to gamble when you can be sure. The Bendix-Friez* Portable Temperature and Humidity Recorder has taken the gamble out of air conditioning and refrigeration installations. It gives you a permanent record of all temperature and humidity fluctuations on a single chart. You don't have to estimate the problem—you can *know* exactly what conditions you are dealing with before any installation is begun. In addition, it proves the operating efficiency of your equipment after it is installed.

The Portable Recorder is an excellent selling tool, too. Installed for a short period in a prospect's plant, it will provide information to help you explain just why your equipment is needed, as well as the precise type of equipment required for the job.

Completely automatic, the Recorder does not need wet bulbs, wicks or psychrometric tables and is built for 10-hour or 30-hour continuous operation. Write for our brochure "Bendix Tools for Heating, Refrigeration and Air Conditioning". Address 1401 Taylor Avenue, Baltimore 4, Maryland.



The Bendix-Friez Hygro-Thermograph (above), for more permanent installations, is a superior temperature and humidity monitor, built to U. S. Weather Bureau standards.

*REG. U.S. PAT. OFF.

Friez Instrument Division



Circle No. 5 on Reader Service Card

Commercial Refrigeration & Air Conditioning |

published monthly by

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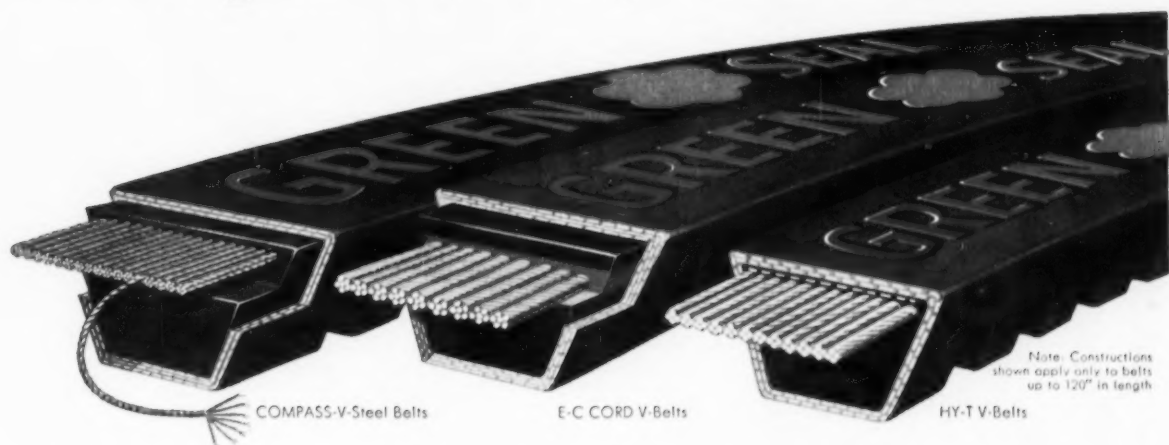
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Now-V-Belts with the Green Seal solve the major multiple drive problem



The Green Seal stands for true dimensional stability in V-belts. And with Green Seal dimensionally stable belts you can be sure that matched sets are truly matched and will stay matched—that mismatching (the biggest problem in belting multiple drives successfully) is a thing of the past.

The key to dimensional stability lies in the tension members of the belt. For many years, steel cables as developed by Goodyear were the only length stable load carriers, but now they have been joined by synthetic cords, thanks to the

amazing Triple-Tempered 3-T process.

The 3-T process is an exclusive method of tempering the cord with Tension, Temperature and Time for maximum strength and minimum change in dimensions. This assures no change in length during storage plus greatly increased shock- and stretch-resistance on the drive.

The end result is smoother, longer-running teams of belts that give you maximum, trouble-free, horsepower hours at minimum cost. What better reason for specifying V-belts with the Green Seal?

DIMENSIONALLY STABLE V-BELTS with the GREEN SEAL by

GOODYEAR
THE GREATEST NAME IN RUBBER

The Goodyear Tire & Rubber Company, Industrial Products Division, Dept. 794, Akron 16, Ohio

Please send me more information about how V-Belts with the Green Seal solve the major problem in belting multiple V-belt drives.

Name

Company

Street Address

City Zone State

Compass, E-C Cord, Hy-T, Green Seal—T. M.'s The Goodyear Tire & Rubber Company, Akron, Ohio

Circle No. 6 on Reader Service Card



Arden's Zero Storage Plant at Fresno, California

No ice formation on Styrofoam® insulation in seven years of use by Arden Farms

Styrofoam, a Dow plastic foam insulation, was first installed by Arden Farms in its Portland, Oregon, ice cream plant in 1950. Since then, Styrofoam has been used in other ice cream plants and a cold storage plant.

"We feel we can use Styrofoam without fear of the insulation becoming ice laden over a period of time," says C. H. Stevenson, Chief Engineer at Arden. "The material eliminates a

great deal of expense in framing the ceiling of our cold storage rooms in that it is very light weight and will not build up with ice. Styrofoam has good insulating qualities and will retain them throughout the entire period of use."

For specific information about Styrofoam and its many outstanding advantages, write to THE DOW CHEMICAL COMPANY, Midland, Michigan, Department PL-1702A-1

CHECK THIS EXCLUSIVE COMBINATION OF PROPERTIES

STYROFOAM® FIRST IN PLASTIC FOAM INSULATION	Insulations	Low "K" factor	Superior water resistance	High compressive strength	Light weight	Superior resistance to rot and vermin	Easy handling and fabrication	Low-cost installation	Lowest cost per year service
	STYROFOAM	•	•	•	•	•	•	•	•
	A	•	•	•	•	•	•	•	•
	B	•			•			•	
	C	•		•					

Styrofoam is a registered trademark of The Dow Chemical Company

YOU CAN DEPEND ON

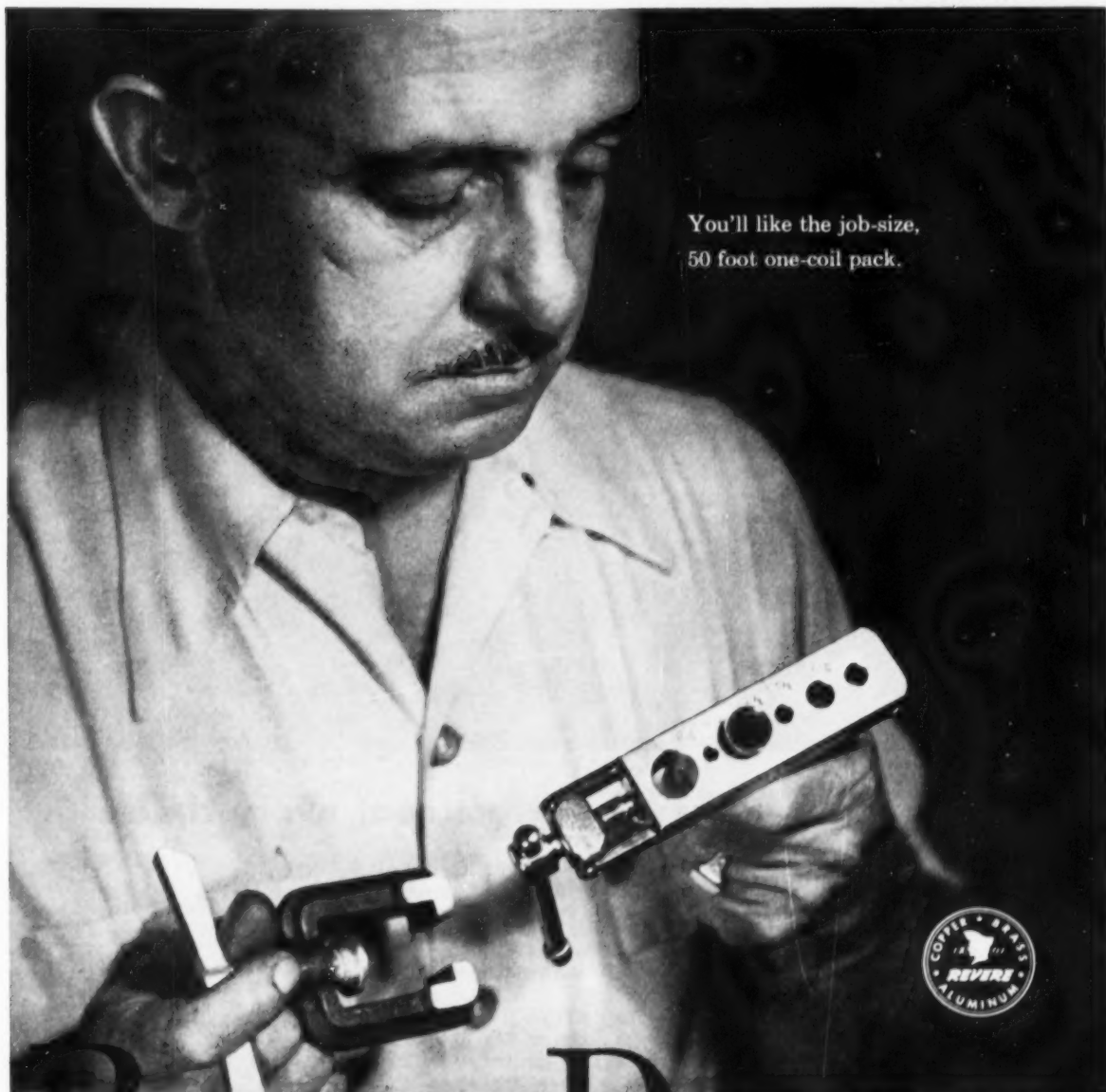
DOW

Circle No. 7 on Reader Service Card

AUGUST, 1957 • COMMERCIAL REFRIGERATION

Split-free flare

Because DRYSEAL tube is dead-soft, flares are perfect every time. DRYSEAL bends finger-easy, too. Stays bone-dry, whistle-clean, mirror-smooth. The crimp is double . . . and tube-size to slip easily through fittings. Sizes $\frac{1}{8}$ " to $\frac{3}{4}$ ". Use DRYSEAL on your next job.



You'll like the job-size,
50 foot one-coil pack.



Revere Dryseal

COPPER REFRIGERATION TUBE

You'll find a Revere Distributor close at hand.

REVERE COPPER AND BRASS INCORPORATED, founded in 1801 by Paul Revere



Permagem makes a perfect seal every time

Manufacturers and service men alike prefer the positive sealing action they get from Permagem. Used to seal inspection plates, pipe and conduit openings, refrigeration and display cases, Permagem eliminates the host of troubles which condensation can bring down on your head—from just plain heat loss to ruined insulation.

These men are using gray-white Permagem, which is odorless, never hardens, and can be

painted over immediately after application. Since it won't attack insulation, it is ideal for use around electrical wiring, rubber or plastics. Brown Permagem is a heavy-duty sealer which will adhere to any dry surface and remain pliable from 0° to 350°. Both forms come in 2½ lb. and 55 lb. slugs, while gray-white Permagem is also available in 80 ft. rolls of 3/16" cords and 20 ft. rolls of 3/8" cords.

Your wholesaler has Perma-

gum—or write Refrigeration Division, VIRGINIA SMELTING CO., 219 Jefferson, West Norfolk, Va.



ESOTOOL-KINETIC-CHEMICAL'S "FROTH" REFRIGERANTS • METH. L. CAN. O. GAS • PERMAGUM • PRESSTITE TAPE • KWIKWRAP • SUNISO REFRIGERATION OILS • WATER TREATMENT CHEMICALS
Available in Canada and many other countries



Won't attack electrical insulation.



Seals pipe openings permanently.

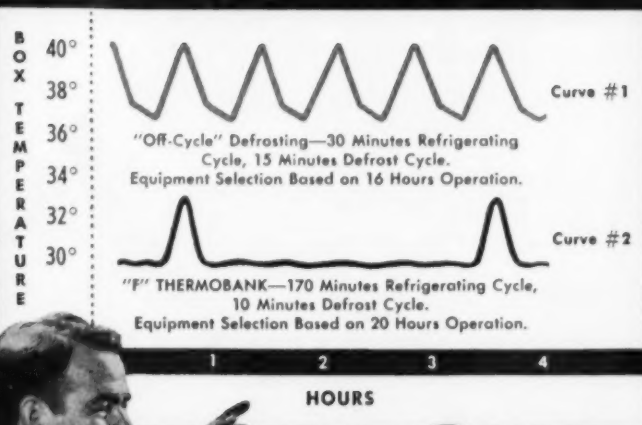


Perfect for refrigerator and display cases.

Circle No. 9 on Reader Service Card

AUGUST, 1957 • COMMERCIAL REFRIGERATION

FRESH FOOD INDUSTRY ACCLAIMS NEW **KRAMER** "F" THERMOBANK



KRAMER UNFOLDS A NEW CONCEPT OF REFRIGERATION APPLICATION FOR FRESH FOOD

To obtain the fullest advantage in the storage of most fresh food, a constant temperature of 30° or 32° must be maintained. Since every defrost cycle results in fluctuations in temperature and humidity, to maintain the best storage conditions the number of defrost periods and the length of each defrost must be reduced to an absolute minimum.

The new "F" THERMOBANK has the fewest possible defrost periods and is the only system that will go into a defrost when it is really needed and not before; this is most essential to prevent unnecessary defrost which results in wide temperature and humidity fluctuations in the storage room. (See Curves)

The "F" THERMOBANK is completely defrosted in the shortest possible duration (10 minutes). No other defrost system, regardless of type, can approach this fast defrost,

but the rapidity of defrost is indispensable to hold the ideal conditions of 30° or 32°.

Because the "F" THERMOBANK guarantees the fewest and most rapid defrosts, equipment is selected for 20 hours operation. This permits the selection of a smaller compressor and a smaller THERMOBANK system resulting in lower first cost as well as economical operation. When the added benefits of "F" THERMOBANK features such as less waste, longer shelf-life, less dehydration, less mold and bacterial infection, and maintenance of "freshness" during storage, are included in the cost estimate, the "F" THERMOBANK is incomparable in value.

Selection and application of the "F" THERMOBANK are simple. Rapid selection tables covering a wide range of cooler sizes for 30° applications are available.

WRITE FOR BULLETIN TV-380

KRAMER TRENTON CO. • Trenton 5, N.J.

43 YEARS OF CONTINUOUS ACHIEVEMENT IN HEAT TRANSFER

Circle No. 10 on Reader Service Card

& AIR CONDITIONING • AUGUST, 1957

NEW!

Henry Abso-Dry®

Pressure Sealed Driers

U. S. Patent No. 2283989



Only a HENRY DRIER proves its dryness with a Hiss®

To obtain maximum drying efficiency, Henry thoroughly reactivates each drier and, by an exclusive, patented process of manufacture, provides positive indication, by pressure sealing, that the drier is tight, dry, and factory-fresh on reaching the user.

Complete Size Range—The complete range of types, capacities, and connection sizes permits the selection of the proper Henry drier for any installation.

STOCKED AND SOLD BY LEADING JOBBERS.

HENRY VALVE CO.

MELROSE PARK, ILLINOIS (Chicago Suburb)

Cable: Hevalco, Melrose Park, Illinois

**VALVES, DRIERS, STRAINERS, AND ACCESSORIES FOR
REFRIGERATION, AIR CONDITIONING AND INDUSTRIAL APPLICATIONS**

*"They Hiss and Tell"**



***TRADE-MARK**

When the end connection seal of a new Henry drier is loosened prior to installation, there is a hissing sound due to the escape of dehydrated air.



**LISTED BY UNDERWRITERS'
LABORATORIES, INC. UNDER
RE-EXAMINATION SERVICE
FOR WORKING PRESSURES OF
350 P.S.I. AND 500 P.S.I.**

**The perfect
temper
for every
temperature!**



CHASE[®] copper refrigeration tube

You can count on peak efficiency heat-transfer at all temperatures when you use Chase Copper Refrigeration Tube.

Chase tube is uniform in temper... permits ample expansion and contraction with any type refrigerant. No loose connections. No heat-transfer loss.

Chase has established special mill procedures for copper tube used by the

refrigeration and air-conditioning industry. In addition to 100% visual inspection, each coil of Chase Refrigeration tube is pneumatically tested to insure tops in quality.

Only *perfect* tube — clean, bright, oxide-free and pressure-tight — ever reaches your shop. So for perfect jobs, start by ordering Chase!

Chase
BRASS & COPPER CO.
WATERBURY 20, CONNECTICUT
SUBSIDIARY OF KENNECOTT COPPER CORPORATION

The Nation's Headquarters for Brass, Copper and Stainless Steel

Atlanta Baltimore Boston Charlotte Chicago Cincinnati Cleveland Dallas Denver Detroit Grand Rapids Houston Indianapolis Kansas City, Mo. Los Angeles Milwaukee Minneapolis Newark New Orleans New York (Maspeth, L.I.) Philadelphia Pittsburgh Providence Rochester St. Louis San Francisco Seattle Waterbury

Circle No. 12 on Reader Service Card



Jenni Genetron says

*"These are the
Modern refrigerants for
the Air Conditioned Age"*

genetron[®]

Tested! Approved! For America's Finest Air Conditioning Equipment!

America moves into the air conditioned age. In houses and apartments . . . in stores and factories . . . in offices and public buildings, man-made weather is the order of the day, calling for air conditioning equipment of highest efficiency and economy.

"Genetron" Super-Dry Refrigerants are tailor made for such systems. They meet or surpass the industry's most exacting specifications for fluorinated hydrocarbon refrigerants. Leading manufacturers have tested them exhaustively . . . have approved and certified "Genetron" Super-Dry Refrigerants for original or replacement charge in America's finest equipment!

Moisture Out! Trouble Out!

The quality specifications on the opposite page tell why "Genetron" Refrigerants are so dependable. Note their exceptionally low moisture content, their very low percentages of non-condensable gases and high boiling impurities. Here are refrigerants that can be counted upon for trouble-free performance every time!

Stable! Safe! Nonflammable! Noncorrosive!

Always specify "Genetron" Super-Dry Refrigerants for your equipment. Learn for yourself why "Genetrons" are the "Modern refrigerants for the air conditioned age."

- Super-Dry! Guaranteed exceptionally low moisture content
- Noncorrosive to standard equipment materials
- Nontoxic, nonflammable, stable, safe
- Critical and freezing points well outside range of operating uses
- Solvent action on oil helps prevent solidification or congealing of lubricant
- Miscible with oil; aid in lubrication of equipment
- Identical and freely interchangeable with comparable fluorinated hydrocarbon refrigerants made by any other manufacturer meeting the same high standards

Extremely low moisture content! Exceptionally high purity!

Circle No. 13 on Reader Service Card

For Homes and Offices of
the Air Conditioned Age!



Super-Dry Refrigerants



For Stores and Public Buildings of
the Air Conditioned Age!



For Factories of the Air Conditioned Age!

genetron 11 ORANGE LABEL

TRICHLOROMONOFUOROMETHANE

Quality Specifications

Moisture wt. %, max.....	0.0010
Chlorides	none
High boiling impurities—vol. %, max.....	0.01
Boiling pt. at 760 mm. Hg. °F.....	74.7
Boiling range °F (to 85% pt.), max.....	0.5

genetron 12 WHITE LABEL

DICHLORODIFLUOROMETHANE

Quality Specifications

Moisture wt. %, max.....	0.0010
Chlorides	none
High boiling impurities—vol. %, max.....	0.01
Non-condensable gases (gases insoluble in perchloroethylene)—vol. % in vapor phase, max. 1.5	
Boiling pt. at 760 mm. Hg. °F.....	-21.6
Boiling range °F (to 85% pt.), max.....	0.5

genetron 22 GREEN LABEL

MONOCHLORODIFLUOROMETHANE

Quality Specifications

Moisture wt. %, max.....	0.0010
Chlorides	none
High boiling impurities—vol. %, max.....	0.01
Non-condensable gases (gases insoluble in perchloroethylene)—vol. % in vapor phase, max. 1.5	
Boiling pt. at 760 mm. Hg. °F.....	-41.4
Boiling range °F (to 85% pt.), max.....	0.5

genetron 113 PURPLE LABEL

TRICHLOROFLUOROETHANE

Quality Specifications

Moisture wt. %, max.....	0.0025
Chlorides	none
Boiling pt. at 760 mm. Hg. °F.....	117.6
Boiling range °F (to 85% pt.), max.....	1.8

USES

Trichloromonofluoromethane ("Genetron" 11) finds widespread use as a refrigerant in industrial and commercial air conditioning systems using single or multi-stage centrifugal compressors. It can also be used for either direct or indirect expansion-type systems.

USES

Dichlorodifluoromethane ("Genetron" 12) and Monochlorodifluoromethane ("Genetron" 22) are the most widely used organic fluorine refrigerants. They are used in virtually all types of air conditioning equipment, large and small, household and industrial, direct and indirect expansion systems.

Some of the typical units in which "Genetron" 12 and 22 are used: window air conditioners, home or office console units, large store units, large custom-built units for commercial comfort, large home units for addition to present hot air heating systems, and mobile units for transportation equipment.

USES

Trichlorotrifluoroethane ("Genetron" 113) is used in 50-ton and larger centrifugal compressors, primarily for large comfort cooling systems, brine cooling systems, and other commercial and industrial air conditioning systems.

For further information, see your wholesaler
or call or write

genetron department

GENERAL CHEMICAL DIVISION

ALLIED CHEMICAL & DYE CORPORATION

40 Rector Street, New York 6, N. Y.



Wherever you are,
"Genetron" Super-Dry
Refrigerants are as close
to you as your tele-
phone. Featured by
Leading Refrigeration
Wholesalers from Coast
to Coast.





now...

White-Rodgers

Fashion

THERMOSTAT

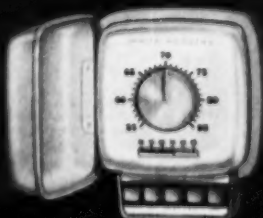
adds the sales power of

PUSH BUTTON

heating-cooling control

Thermostat and sub-base
for every heating-cooling system!

Each equipped with latest
design dial-type adjustable
resistor... can be set to
match any primary control.



Cash in now on
the sales power
of PushButton
...write, wire, or
phone today!

TEMPERATURE CONTROLS
FOR MODERN COMFORT

WHITE-RODGERS

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TORONTO 8, CANADA



Circle No. 14 on Reader Service Card

AUGUST, 1957 • COMMERCIAL REFRIGERATION

Now—Especially designed for
REFRIGERATION and AIR CONDITIONER Servicing

AMPROBE RS-2

Rotary-scale volt-ammeter

**150/300
 VOLTAGE RANGES***

NOW! A great new rotary-range AMPROBE with all the voltage and current ranges **you** need most. Here's why AMPROBE RS-2 is 4 ways easier to read than any other test instrument you ever used.

- 1. SEE ONLY ONE SCALE AT A TIME.** 4 current ranges, 2 voltage ranges—each on a scale of its own. Every range you need—all on one time-saving tester!
- 2. ONE HAND-OPERATION!** Range selector knob is right next to your thumb.
- 3. NEW MAGNIFIED DIAL...** LONGER SCALE LENGTH. Greater visibility, greater accuracy than ever before.
- 4. POINTER-LOCK "FREEZES" POINTER AT READING.** Use the RS-2 any place your hand can reach—Needle can be locked in place so that you may read it away from conductor.



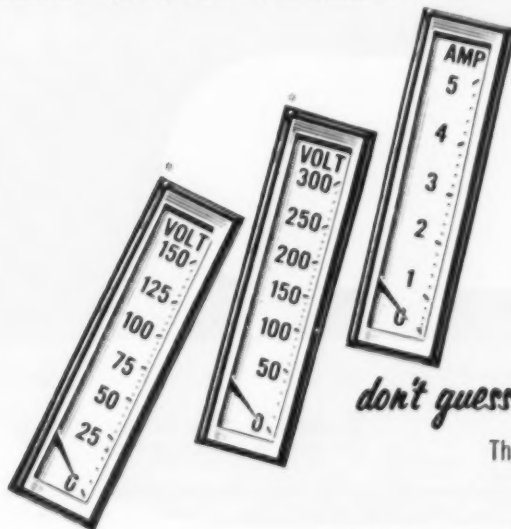
\$39⁸⁵

The only tester of its kind
 at the low, low price of only

*don't guess at it; **AMPROBE IT!***

There's an AMPROBE for every job and every budget

PYRAMID INSTRUMENT CORPORATION, Lynbrook, N. Y.





National Home Office of the Allstate Insurance Company.

Wagner Motors help B & G Pumps meet their toughest test... QUIET OPERATION!

Circulating pumps used in hot water heating systems must be silent—vibrationless in operation, since they are the connecting links between the boiler room and the structure itself. A prime requirement for quiet pump operation is an electric motor that operates almost silently, yet has plenty of stamina to hold up under years of hard, steady operation.

That's why Bell & Gossett Company used Wagner Motors on the Universal Pumps in the Allstate Insur-

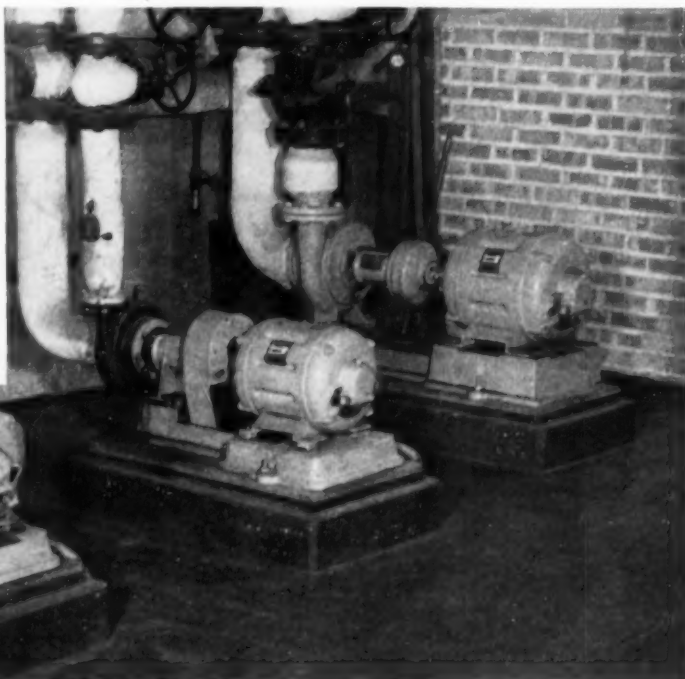
ance Company home office. These quiet-type motors are known for smooth balance and quiet operation.

Perhaps you have a specialized motor application... if so, remember, there's a Wagner motor to fit every need... a complete line for all current specifications with a wide variety of enclosure types and mountings.

Your nearby Wagner engineer can help you select the *right* motor to meet your specifications. Call the nearest of our 32 branch offices or write us.



Standard resilient mounted Wagner Motors, up through 5 hp, can be used for special applications where extremely quiet operation is demanded. Sleeve or ball bearings.



BRANCHES AND DISTRIBUTORS IN ALL PRINCIPAL CITIES

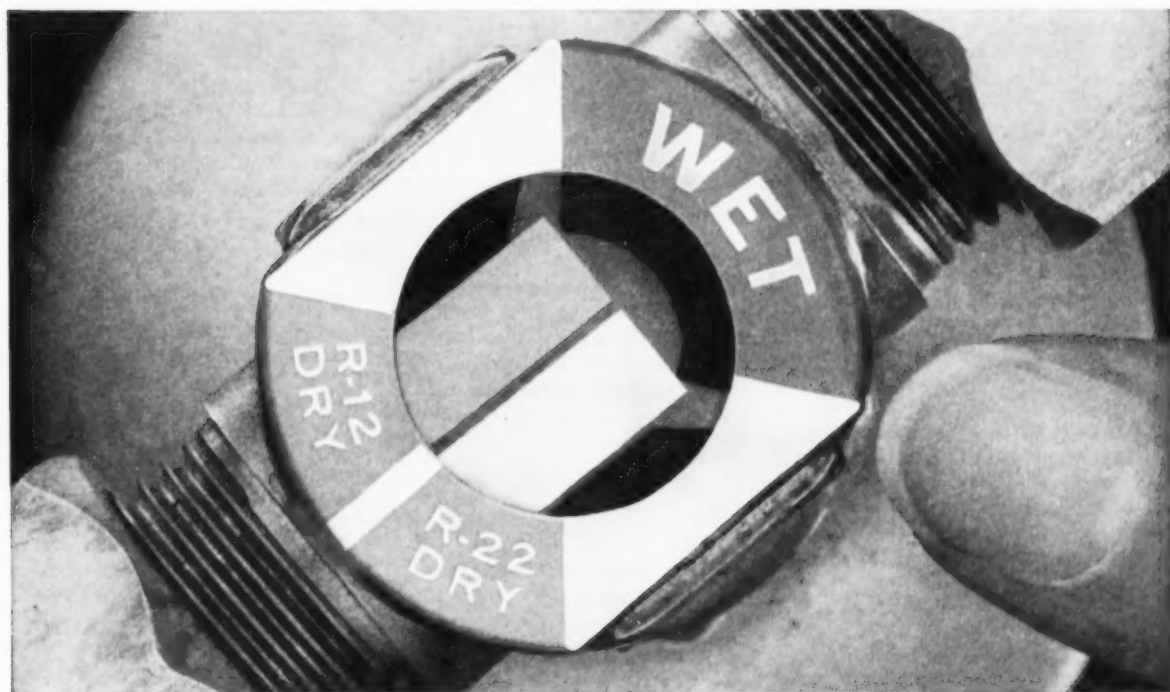
Wagner Electric Corporation

6442 Plymouth Ave., St. Louis 14, Mo., U.S.A.

M17-9

IT'S HERE!

The world's first moisture indicator with a built-in sight glass. The new **ANSUL SUPER DRY-EYE** tells you at a glance if the refrigerant is dry or dangerously wet, and lets you see the condition of the refrigerant. Here are the four big servicing questions the super **DRY-EYE** answers for you scientifically!



Q. If I am using Freon-12 how will I know if it is dangerously wet or dry?

A. Just look through the big window at the R-12 indicating element. If it is blue the refrigerant is safe; less than 10 parts per million of moisture present. If it is pink, moisture has climbed above 30 ppm—time to change driers.

Q. If I use Freon-22 in a system how will I know if it is wet or dry?

A. If the R-22 element is green your refrigerant is in safe operating condition—less than 20 ppm of moisture. If the element shows pink, moisture has reached the 25 ppm level; time to change driers and avert a costly breakdown.

Q. Will the Super Dry-Eye tell me if there is a low refrigerant charge?

A. Yes. The fused glass window, the first proven *leak-proof*

sight glass in the industry, permits visual inspection of the refrigerant at all times. Bubbles indicate a low refrigerant charge or a possible restriction in the line.

Q. Is there a simple, economical way of correcting the problems which the Super Dry-Eye tells me about?

A. The T-fitting which houses the Super Dry-Eye can also serve as a connection for an Ansul T-Flo drier without an additional break in the line. The drier screws in like a light bulb and hand tightening gives a leak-proof seal.

The Ansul Chemical Company, Marinette, Wisconsin



ABOUT PEOPLE

Appointment of **Robert W. Saxton** as assistant general sales manager has been announced by



Tranter Mfg., Inc. Saxton will be responsible for direction and coordination of all inside sales activity, and will assist in the direction of outside sales activity. He joined Tranter in 1953, as sales manager for Contract Div., after having served as District Sales Supervisor for U. S. Gypsum Co., of Chicago.

William D. Graham Sr., manager of the Trane Co. office at La Crosse, Wis., has announced his retirement. Graham has headed up the local office since 1951, when he came from the Greensboro, S. C., office. He served as manager there since 1946. Succeeding Graham as manager will be **Fred Manget Jr.**, sales engineer with the firm's Dallas office since 1948. Manget joined Trane in 1948. He then was assigned to the Dallas office as a sales engineer.

Appointment of **Roland S. Jamison** to supervise a national marketing and publicity program for low temperature refrigeration equipment has been announced by Harris Refrigeration Co.



Jamison will administer this program from his headquarters in Cincinnati, in addition to supervising application engineering in 14 states in the Mid-

west area. From 1943 until this year, he managed the service and development program in low temperature refrigeration equipment for Cincinnati Sub-Zero Products Co., where he was assistant to the president.

Paul W. Wyckoff, chief engineer, has assumed direction of all engineering activities for Airtemp Div. of Chrysler Corp.



Wyckoff joined Chrysler in 1939 as a graduate student in Chrysler Institute of Engineering. He later joined Chrysler Central Engineering Fuel Systems Laboratory as a project engineer. He began his affiliation with Airtemp in 1946 as director of the company's engineering laboratory. He was named assistant chief engineer in 1950.

T. B. Levene has been appointed manager of production control and purchases for Curtis Mfg. Co. The new position was created specifically for Levene, who has worked in every phase of production control and purchasing during the past 25 years. He has been with Curtis since 1929.

Distribution district manager appointments arising from the newly created Worthington Corp. air conditioning and refrigeration internal sales organization have been announced. Named as distribution district managers of the new sales offices are: **R. O. Gundlach**, midwest district with headquarters in Chicago; **H. A. Cald-**

well, southeastern district, Atlanta; **J. A. Klaiber**, central district, Cleveland; **H. Fleit**, northeastern district, New York City; and **J. S. Cavanaugh**, East central district, Philadelphia.

Henry R. Pataky has been named director of sales for Norman Products Co., Columbus, Ohio.



Pataky, in the heating and air conditioning field since 1931, has served in many capacities from salesman to sales director of leading companies in the industry. Norman manufactures a complete line of horizontal furnaces: residential, commercial and industrial conversion burners, duct furnace and blower filter units.

Simpson Electric Co. announces the addition of **John F. Schipitz** and **Robert Vandervoort** to its sales staff. Their duties will be handling of industrial and distributor sales.

Koch Refrigerators, Inc., has announced the appointment of



Jack Haber as sales engineer. Prior to joining the firm, Haber was manager of the central operations department, Allied Purchasing Corp. He has been assistant merchandise Manager as Wertgame Paper Co.

H. C. "Pat" Patterson has announced his retirement as manager of Kelvinator's commercial division, effective July 31. Patter-



**"For servicing hermetics profitably,
Imperial gives me everything I need!"**



**Saves valuable shop
and on-job hours on
rechargeable units**

Imperial hermetic servicing kits and accessories are *key equipment* in shops known for fast, guaranteed servicing on sealed hermetic units. And that includes everything needed for charging, purging and testing!

It makes a lot of sense to equip with a line that gives you many high-speed working advantages. For example, in Imperial Hermetic Service Kits, the gauge and wheel handle are always attached to the valve, ready for instant use. You'll like the fast action of Imperial Kwik-Kupler fittings on charging lines.

Imperial piercing valves tap line at any point. Tap-a-Can dispensing valve saves extra refrigerant . . . eliminates waste.



NO. 99-FT CHARGING LINE — Highly flexible. Makes extra close bends. Has Kwik-Kupler connection at both ends. One end is 45° elbow. Seal gasket cannot be blown or dropped out. High burst-strength provides extra margin of safety.



NO. 189-F SERVICE VALVE KIT — Eliminates a separate valve for each hermetic unit. Valve equipped with wheel handle for easy operation. Gauge reads from 30 in. to 60 lbs., retard to 250 lbs. Contains 9 adapters, 6 wrenches, 5 gaskets, plus handy service data chart on cover.



NO. 330-C TAP-A-CAN VALVE — for dispensing canned refrigerant. Handy, positive-acting. Pierces can, and provides shut-off. For use on Charg-a-Can packaged refrigerant. Use just the refrigerant you need — save the rest for the next job.

NO. 341-C PIERCING VALVE — Taps line at any point. Can be used on 4 sizes: 3/16, 1/4, 5/16 and 3/8-in. O.D. tubing. Swivel anvil built into unit — cannot be dropped or lost.

Ask your wholesaler for all the details on Imperial, or write direct for your free copy of Catalog 81-A



IMPERIAL

THE IMPERIAL BRASS MFG. CO., 568 S. Racine Ave., Chicago 7, Ill.
In Canada: 334 Lauder Ave., Toronto, Ontario

FITTINGS • VALVES • DRIERS • FILTERS • TOOLS FOR cutting, flaring, bending, pinch-off, swaging

& AIR CONDITIONING • AUGUST, 1957

Circle No. 17 on Reader Service Card

Emblem of Quality

son has been in charge of Kelvinator's commercial division since 1946 and has been with the company for the past 20 years.

Appointment of **Walter W. Oman** as service manager of its Air Conditioning Div. has been announced by Remington Corp. Prior to joining Remington, Oman was assistant factory service supervisor for Cherry-Burrell Corp. at its plant in Little Falls, N. Y.

He has been engaged continuously in refrigeration and air conditioning service for the last 18 years, 11 of which were as service engineer with Utica Refrigeration Engineering Co., Frigidaire distributor, Utica, N. Y. He replaces William Figg.

Trane Co. has named two more men to specialize in the sale of its line of self-contained air conditioners. They are **David E. Wash-**

burn and Robert J. Doran. The two men have been assigned to the firm's Pittsburgh and Greensboro, N. C., offices, respectively. Washburn formerly was manager of sales for similar equipment with a distributor. Doran's experience includes a number of years as a sales representative, air conditioning equipment, for two distributors.

Richard H. Mills has joined Anderson Chemical Co. Mills will take an active part in a dual program of expansion in laboratory facilities and personnel, and in field representation throughout the southeast. He has been active in the field of water chemistry and water treatment.

Raymond S. Doherty has been appointed builder sales and promotion manager, Heating and Air Conditioning Div., National-U.S. Radiator Corp. Doherty formerly was manager of packet sales. He will headquarter at the division's main office in Johnstown, Pa. He has been with the company since 1949. He has had more than 25 years in sales, advertising, sales promotion, and sales management experience.

Dole Refrigerating Co., announces the election of **Harold P. Hansen** to the office of executive vice president. Hansen has spent 17 years with Dole starting in the Factory and progressing in to the sales department as district representative in upper New York

WATER an ever-present menace!



The Nautilus, the first atomic submarine, can cruise for over a year without refueling. Even though this is the most powerful undersea craft ever built, water leaking into the hull would very quickly put it out of commission. Water must be kept out!

So with refrigeration units . . . the entry of water invariably causes them to cease functioning. The quickest and surest way to correct this is to inject Thawzone, the moving dehydrator, which circulates throughout the entire system, destroying moisture wherever found.

THAWZONE HAS VERY DEFINITE ADVANTAGES:

1. Actually destroys moisture . . . not a mere anti-freeze.
2. Scavenges oxygen . . . helps to overcome the harmful effect of traces of oxygen which may remain in a refrigeration system after the usual purging.
3. Cannot cause pressure drop.
4. Does not release moisture when temperature changes.
5. May be used in units containing any of the "Freons", methyl chloride, methylene chloride or isobutane.
6. Costs only about 8 cents per lb. of refrigerant treated. Used in minute amounts.

Try a 1 oz. bottle of Thawzone today! Also available in 4 oz. and pint bottles. Call your wholesaler.

HIGHSIDE CHEMICALS
INCORPORATED
(Formerly STEWART INDUSTRIES, INC.)
4 COLFAX AVENUE
CLIFTON, NEW JERSEY



Circle No. 18 on Reader Service Card

State in 1945. He became Canadian branch manager of Dole Refrigerating Products Ltd. in 1948. In 1952, he returned from Canada and was appointed general sales manager of the home office. He was appointed assistant general manager in 1956.

Appointment of **R. G. Potter** as sales engineer has been announced by Dunham-Bush, Inc. Potter will represent the firm in Oregon and Washington. He previously had been associated with



Commercial Refrigeration, Inc., as a manufacturer's representative for air conditioning, heating, and refrigeration equipment.

Eugene G. Swartz has been named vice president in charge of administration and finance for Flexible Tubing Corp. **Charles E. Smith**, recently named factory manager, now will have overall responsibility for the manufacturing operations of the company, reporting directly to the firm's president, F. K. Daggett.

Richard A. Matheis has been promoted to manager of The Trane Co. sales office in Cincinnati.

Madden Brass Products Co., has announced the appointment of **J. A. Dorman** to the company's sales force. Dorman will serve as sales representative in New York City.

E. F. Edwards, midwest district manager of York Corp., subsidiary of Borg-Warner, has resigned to become president of his own firm, E. F. Edwards Co., an



MOISTURE...

is BAD to the last drop!

Moisture remaining in the system after evacuation is costly . . . in efficiency, in Freon, in excess service time and customer confidence. The engineering back of any refrigeration or air conditioning equipment starts on the premise that the system will be thoroughly evacuated . . . clean and DRY. That's why it pays big dividends to use —

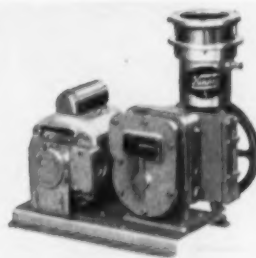
Kinney®

HIGH VACUUM PUMPS



for PRODUCTION

The ideal equipment for production line or multiple-station High Vacuum evacuation . . . KINNEY compound and Single-Stage Pumps in sizes providing free air displacement from 2 to 780 cfm . . . quickly evacuate to a high vacuum.



for SERVICE

KINNEY Pumps afford a complete selection of mobile and stationary High Vacuum Charging Boards, Service Stations and pumping units. The famous KINNEY Compound High Vacuum Pumps quickly attain ultimate pressures of 0.2 micron (McLeod).

WRITE:
for full information on
KINNEY High Vacuum
Pumps and Complete Service
Systems today!



KINNEY MFG. DIVISION
THE NEW YORK AIR BRAKE COMPANY
3818 WASHINGTON STREET • BOSTON 30 • MASS

Please send me literature fully describing KINNEY mobile Service Stations, Charging Boards and KINNEY High Vacuum Pumps.

Name _____
Company _____
Address _____
City _____ Zone _____ State _____

Circle No. 19 on Reader Service Card

LIQUID EYE POSITIVE SEALING INDICATORS



Illustrated: 200 Series, 1/2" or 5/8" female by male flare.

- Pyrex glass, double pressure sealed at sides and ends.
- Provides instant visible check of refrigerant condition.
- Unrestricted full line flow.
- Spring-loaded gaskets insure positive seal against leakage.
- Guaranteed to 500 psi.
- Precision made.

Sold by leading wholesalers everywhere. Write today for Catalog D-55 covering the complete Allin line.



ALLIN MANUFACTURING CO.
410 N. Hermitage Ave.
Chicago 22, Ill.

Over 1,000,000 Liquid Eyes Sold to Date!

independent franchised associate of York. Edwards will sell, install, and service the entire line of York industrial air conditioning and refrigeration equipment in eastern Missouri and southern Illinois.

Willard A. Giddens and **Jame F. Rowe** have been elected vice presidents of Hupp Corp. Giddens, formerly treasurer, will retain that position in addition to new duties. Rowe will be active in Hupp's international operations and its diversification program.

Robert T. Bailiff has been appointed sales promotion manager of L.O.F. Glass Fibers Co. Previously a customer service assistant with the company, Bailiff will report to W. L. Whitcomb, advertising manager. His responsibilities will include trade shows and exhibits, publicity, sales meetings and coordinating public relations activities.

Robert F. Barge has joined Flexonics Corp. as sales engineer for the Lake Erie and St. Lawrence area with headquarters in the firm's Cleveland district office. Barge was formerly manager of the Cleveland branch office of Goodall Rubber Company.

Robin A. Bell, vice president of Surface Combustion Corp. and general manager of the corporation's Janitrol and Kathabar divisions in Columbus, has been elected chairman of the Gas Unit Heater and Duct Furnace Div. of the Gas Appliance Manufacturers Association.

Stanley A. Johnson has been appointed director of manufacturing of A-P Controls Div., Controls Co. of America. Johnson, who is a vice president of the corporation, has been director of purchasing at A-P for the past six years. He will be responsible for all purchasing

Tenney Announces TEH DEFROSTOLATOR

NEW AUTOMATIC DEFROST



At last, an automatic defrost which combines the inherent simplicity of electric defrosting with the frost removal efficiency of hot-gas defrosting.

Yet the defrost mechanism is physically independent of the compressor eliminating restrictions as to the location of the condensing unit.

Positive defrost under any frost accumulation, heavy or light, is assured by the application of a time clock to start the defrost and a pressure control for termination.

Each Tenney TEH-DEFROSTOLATOR is completely self-contained. No additional factory parts are required for multiple unit installations. Same unit cooler is used for single and multiple installations.

Write for complete technical information about sizes and capacities now available. It's in Bulletin 112-57.



CONVENTIONAL STYLE DEFROST
TIME CYCLE IS COMPLETED, BUT FROST IS STILL ON COILS.



TENNEY AUTOMATIC DEFROST
POSITIVE DEFROST ASSURED BY APPLICATION OF TIME CLOCK TO START AND PRESSURE CONTROL TERMINATION.



Tenney
ENGINEERING, INC.
1090 SPRINGFIELD ROAD, UNION, N. J.

Plants: Union, N. J. and Baltimore, Md.

ENGINEERS AND MANUFACTURERS OF REFRIGERATION AND ENVIRONMENTAL TEST EQUIPMENT

***They'll want to finance it
so call in COMMERCIAL CREDIT***



MAKE YOUR PROPOSALS COMPLETE
... most of your prospects need their cash and usual lines of credit for current operations ... make it easier for the prospect to sign on the dotted line by including financing arrangements. **COMMERCIAL CREDIT'S** Refrigeration Plan is backed by many years' experience, handling financing for thousands of commercial refrigeration and air conditioning installations. Let us show you how **COMMERCIAL CREDIT'S** method functions smoothly ... saves you time and trouble. Over 300 offices assure fast service. Call our office in your city or write **COMMERCIAL CREDIT CORPORATION**, Commercial Credit Building, Baltimore 2, Maryland.

COMMERCIAL CREDIT CORPORATION • A service offered through subsidiaries of Commercial Credit Company, Baltimore ... Capital and Surplus over \$200,000,000 ... offices in principal cities of the United States and Canada.

Circle No. 22 on Reader Service Card

and manufacturing activities in the two Milwaukee plants of the Divisional organization.

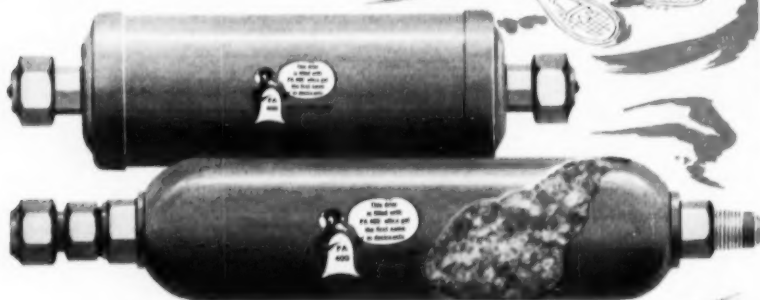
William C. Laughlin, Edward P. Ouellette and William J. Yutz have been appointed self-contained air conditioner sales representatives for Trane Co. They have been assigned to the Houston, Boston, and Louisville offices, respectively.

Remington Corp. announces the appointment of **Andrew E. Reiss** as director of engineering. Reiss joined Remington three years ago as chief manufacturing engineer. He formerly was chief design engineer, Fedders-Quigan Corp., assistant chief engineer, American Radiator Standard-Sanitary Corp., and chief engineer of Morrison Steel Products, Inc., all of Buffalo.

BUY FROM YOUR
REFRIGERATION WHOLESALER

THE COLD FACTS:

More servicemen use driers
filled with PA 400[®]
SILICA GEL
than with any other desiccant!



Here's why millions of pounds of PA 400 are in use today!

- PA 400 driers adsorb as much or more moisture than any drier on the market.
- PA 400 has the highest reserve capacity of any refrigerant desiccant.
- PA 400 not only removes moisture that causes acid formation, but also removes acids already in the system.
- PA 400 is non-dusting, non-deliquescent and does not channel.

Progress Through Chemistry

DAVISON CHEMICAL COMPANY

Division of W. R. Grace & Co.
Baltimore 3, Maryland

Producers of: Catalysts, Inorganic Acids, Triple Superphosphates, Superphosphates, Phosphate Rock, Silica Gels, Silicofluorides, Rare Earths and Thorium. Sole Producers of DAYCO[®] Granulated Fertilizers.

Circle No. 23 on Reader Service Card

Century Engineering Corp., announces that **Floyd H. Aarvig** has been appointed district sales manager of District No. 16, which comprises parts of the states of Kansas, Missouri, Illinois, and Kentucky.

Lt. Col. John L. Morrison has been appointed educational director of National-U.S. Radiator Corp.'s recently inaugurated Air Conditioning School. Formerly a sales engineer for the company, Morrison headquartered in Atlanta and Richmond before coming to the company's home office in Johnstown, Pa.

Dunham-Bush, Inc., has announced the appointment of

Thomas W. Cashman as purchasing agent for its wholly owned subsidiary, Brunner Div. With the firm, Cashman has served successively as chief

estimator, material control supervisor, and staff assistant to the president.

J. E. Wiley, Jr., Dallas merchandising and marketing consultant, has been named sales manager of the Climatic Air Div. of Tyler Service Parts Co., Tyler, Tex., auto air conditioner manufacturer. Wiley will direct the firm's foreign and domestic auto air conditioner sales promotion. **Jack J. Durett, Sr.**, is president of the company.

The Evansville Div., Bendix-Westinghouse Automotive Air Brake Co. has announced three appointments in its manufacturing section. They are: **Richard J. Gerard, Jr.**, named manager of production control; **Edmund A. Tenbarger**, material control su-

pervisor; and **Alvin J. Knapp**, material handling supervisor. Also appointed to posts at the firm were: **Melvin C. Schmidt**, Service accounts supervisor, and **W. M. Russell**, service returns supervisor.

L. E. Cover, who retired April 1 from Armstrong Cork after 41 years of service, has joined Owens-Corning Fiberglas Corp. as a consultant to the company's Appliance and Equipment Products Div.

Sporlan Valve Co. has appointed **Joseph R. Nolet** to take over its Boston office. Nolet replaces **Thor Gislason** who has been named to the engineering staff at Sporlan's home office in St. Louis. Nolet formerly was associated with



J. R. Nolet

T. Gislason

a large refrigeration and air conditioning firm in Boston. He will cover the Boston area and all of New England. Prior to joining Sporlan, Gislason worked as a design, installation, and maintenance engineer on some of the largest refrigeration projects in Iceland.

Frank C. Hawk, general manager of the Betz Div. of Bohn Aluminum & Brass Corp., has announced the appointment of Ray V. Burdeno as plant manager of the Betz Div. at Danville, Ill. Betz manufactures a complete line of heat transfer equipment for commercial refrigeration and air conditioning. Burdeno formerly was assistant plant manager of Bohn's Plant 13 in Adrian Mich., which manufactures component parts for the refrigeration industry. He has been with the company 21 years.

C. C. Stinnette has been appointed divisional sales manager for the states of Maryland, Delaware, Virginia, North Carolina, and the District of Columbia for Sherer-Gillett Co. Stinnette was in charge of the refrigeration department of Grocers Wholesale Co., Huntington, W. Va., for seven years prior to joining the company.

**BUY FROM YOUR
REFRIGERATION WHOLESALER**

NEW WAREHOUSE SERVES BENDIX WESTERN TRADE

Evansville Div. of Bendix-Westinghouse Automotive Air Brake Co. has announced that effective July 15 customers for its hermetic motor-compressors and condensing units on the west coast will be served from a new warehouse locations, the Westland Warehouses, 4814 Loma Vista Ave., Los Angeles 58.

Carl L. Olin, Bendix-Westinghouse's west coast regional manager, will direct the operation.

shuts off both sides of line
... prevents loss of liquid,
gas, or pressure.

**Wherever
2-way shut-off
is required...**

HANSEN

**QUICK-CONNECTIVE
TWO-WAY SHUT-OFF COUPLINGS**

**FOR
PRESSURE
OR VACUUM
SERVICE**

To connect a Hansen Two-Way Shut-Off Coupling, you merely pull back the sleeve and push the Plug into the Socket. To disconnect, just pull back the sleeve. No tools required. When Coupling is disconnected, similar valves in Socket and Plug shut off both ends of line—practically eliminate spilling of liquid or escape of gas at instant of disconnection.

Hansen Series HK Two-Way Shut-Off Couplings for pressure or vacuum service are available with female pipe thread connections from 1/8" to 1" inclusive. All sizes are available in either brass or steel.

WRITE FOR THE HANSEN CATALOG

Here's an always ready reference when you want information on couplings in a hurry. Lists complete range of sizes of Hansen One-Way Shut-Off, Two-Way Shut-Off, and Straight-Through Couplings—including Special Service Couplings for Steam, Oxygen, Acetylene, etc.



REPRESENTATIVES IN PRINCIPAL CITIES

SINCE 1915



QUICK-CONNECTIVE FLUID LINE COUPLINGS

THE HANSEN MANUFACTURING COMPANY

4021 WEST 150th STREET • CLEVELAND 11, OHIO

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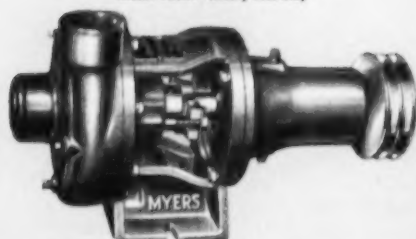
Model 100M Model 200M
Shown with rotary seal (available with stuffing box)



Model 125M Model 150M
Shown with stuffing box (available with rotary seal)



Model 100M—Rotary seal only



Model 125B Model 150B Model 200B
Shown with stuffing box
(available with rotary seal)



Model 100B—Rotary seal only

Myers Centri-Thrift Pumps for Air Conditioning

PAY OFF 3 WAYS

1 Longer Continuous Performance

- All-bronze impeller, accurately balanced for smooth operation.
- Removable bronze wearing ring, easily replaced.
- Corrosion resistant, stainless steel shaft.
- Backed with a warranty unsurpassed in the industry.

2 Complete Line to Meet Any Specification

- Full range of sizes: 1" x 1 1/4", 1 1/4" x 1 1/2", 1 1/2" x 2", 2" x 2 1/2", threaded discharge and suction. 1/4, 1/2, 3/4, 1, 1 1/2, 2, 3, 5 and 7 1/2 horsepower, motor-mounted or belt driven.
- Regularly fitted with high quality rotary ceramic-faced seal. Stuffing box may be specified on "125", "150" and "200" models.
- Choice of motors: single or three phase, single or dual voltage, open or enclosed.
- Competitively priced.

3 Field-proven Service

- Capacities to 240 gallons per minute. Heads to 140 feet.

WRITE TODAY FOR SECTION 210

ON MYERS CENTRI-THRIFT PUMPS

Myers PUMPS

THE F. E. MYERS & BRO. CO. • ASHLAND, OHIO • KITCHENER, ONTARIO



*Sure way
to solve
regulating
valve
problems*

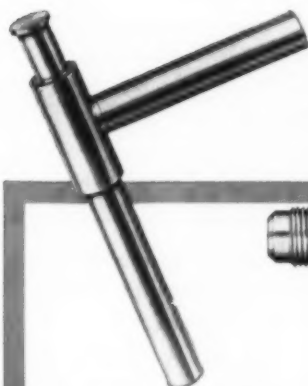


You can rely on **A-P**

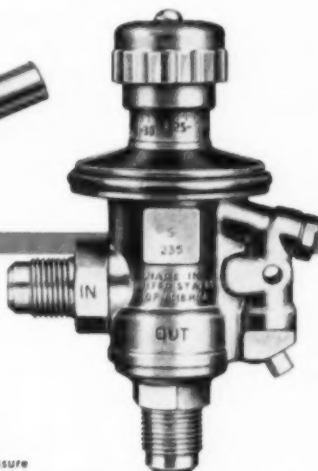
Two things make it easy for us to back up this statement. First, we offer you a range of regulating valves that covers just about every known flow control problem. And secondly, we've more than doubled creative research and design staffs through the combined facilities of Controls Company of America. This wealth of flow-control experience is easily the greatest in the field.

So, if you need standards like the valves shown—or quantity “specials” created for specific purposes, we urge you to contact A-P first. We'll deliver in any quantity on schedules geared to fit your plans.

Write for a copy of A-P's new complete-line catalog.



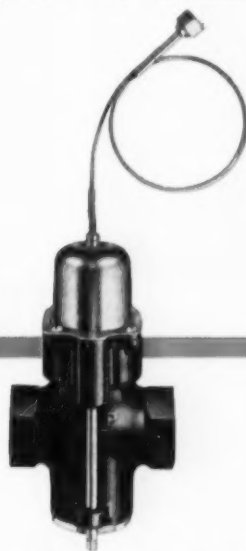
MODEL 237 crankcase pressure regulating valve — for hot gas or electric defrost installation. Two capacity ranges: 1½ and 3 tons R-12. Flare or solder connections. Two adj. ranges: 0 lb. to 60 lb. opening point; 35 lb. to 160 lb. opening point.



MODEL 235-S—Evaporator pressure regulating valve — ½ ton R-12, visual pressure setting from 0 to 40 lbs. Also available with 20 to 70-lb. adjustment range. Suitable for all refrigerants.



MODEL 239 pressure regulating valve — for all non-corrosive refrigerants. Two adjustment ranges: 40-140 and 80-120 psig, opening point. Protected with long spud solder connections. Valve opens on inlet pressure increase.



MODEL 65—Chatter-free water regulating valve — for all non-corrosive refrigerants. Sliding seat and ceramic seat models. Ranges: 65 to 200 psi, 165 to 300 psi; 1/8", 1/2", 3/4" sizes; 70 to 170 and 60 to 240 psi (1" and 1 1/4" sizes).

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Manufacturers of A-P CONTROLS

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Controls That Make Modern Living Possible



JUST A FEW OF THE MANY TYPICAL USERS

Phenix Soda Fountain Company, Inc.
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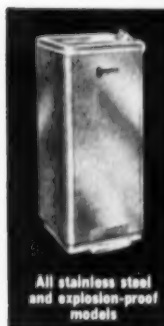
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WATER COOLERS

Beautifully styled. Precision engineered. 22 models from which to choose. Traditional standards of highest quality are firmly maintained. Prices remain truly competitive.



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All stainless steel and explosion-proof models



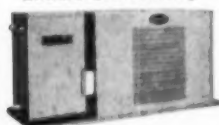
Compartment models



Caulet models



Liberal 5-Year Warranty



Remote type coolers in 4 models from 6 to 24 g.p.h.

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P.O. Box 72-B
East Maple, Birmingham, Mich.

Over 27 years of liquid cooling experience

Circle No. 27 on Reader Service Card

Calendar of Industry Events

October 7-9, 1957

American Gas Assn. (Annual Convention)
Kiel Auditorium
St. Louis, Mo.

November 14-16, 1957

American Society of Refrigerating Engineers (Semi-Annual Meeting)
Shoreland Hotel
Chicago, Ill.

November 16-18, 1957

Air-Conditioning and Refrigeration Wholesalers (Annual Meeting)
Sheraton Hotel
Chicago, Ill.

November 16-18, 1957

Refrigeration and Air Conditioning Contractors Association (Annual Convention)
Drake Hotel
Chicago, Ill.

November 18-19, 1957

National Commercial Refrigerator Sales Association (Annual Convention)
LaSalle Hotel
Chicago, Ill.

November 18-21, 1957

10th Exposition of Air Conditioning & Refrigeration Industry
International Amphitheater
Chicago, Ill.

November 18-22, 1957

National Warm Air Heating and Air Conditioning Assn. (Committee Meetings and Annual Convention)
Hotel Morrison
Chicago, Ill.

January 27-29, 1958

American Society of Heating and Air Conditioning Engineers (Annual Meeting)
Pittsburgh, Pa.

May 4-7, 1958

Air-Conditioning and Refrigeration Institute (Board Meeting and Annual Meeting)
The Homestead
Hot Springs, Va.

May 5-9, 1958

National Restaurant Association (Convention and Exposition)
Navy Pier
Chicago, Ill.

BANISH STUCK PUMPS!

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PUMP AID

Now is the time to prevent stuck pumps . . . expensive and time consuming repairs next Spring — your BUSY season! After draining pump, simply inject PUMP AID into pump housing through drain hole. Aerosol packaged PUMP AID E-X-P-A-N-D-S to cover all interior surfaces. At start-up time — just throw the switch and your pump is running. PUMP AID is water soluble and washes away. Easy-to-follow directions on each can. May be used in any make or model pump.

PUMP AID..

- PREVENTS CORROSION
- PRESERVES SEALS
- WILL NOT FREEZE
- WILL NOT EVAPORATE
- IS WATER SOLUBLE
- IS NOT TOXIC
- IS EASY TO USE
- IS REASONABLY PRICED

Order by the case of twelve cans today from your dealer and be prepared when shut-down time comes. Or write

The GARMAN Co.

1253 GROVER ROAD
ST. LOUIS 23, MISSOURI

Manufacturers of
VAPCO CLEANER, PREVENTIVE, SLIME-X
and ICE MACHINE CLEANER

Circle No. 28 on Reader Service Card

Armalite—new insulation for cold rooms is strong, light, and highly efficient

A brand-new, board-form insulation for cold rooms operating at temperatures as low as minus 50° F. has been developed recently by Armstrong. Called Armalite*, it's a white closed cellular material with an extremely low K-factor of 0.24 Btu-in./sq.ft.-hr.-°F. at 70° mean temperature. Armalite has a resilience or "springiness" that allows tight joint construction, and its dimensional stability in service is excellent. Light weight of only 1.25 lbs. per cubic foot means easy handling. High strength keeps edges and corners sharp and accurate. Boards are 12" x 36," in 2", 3", and 4" thicknesses.

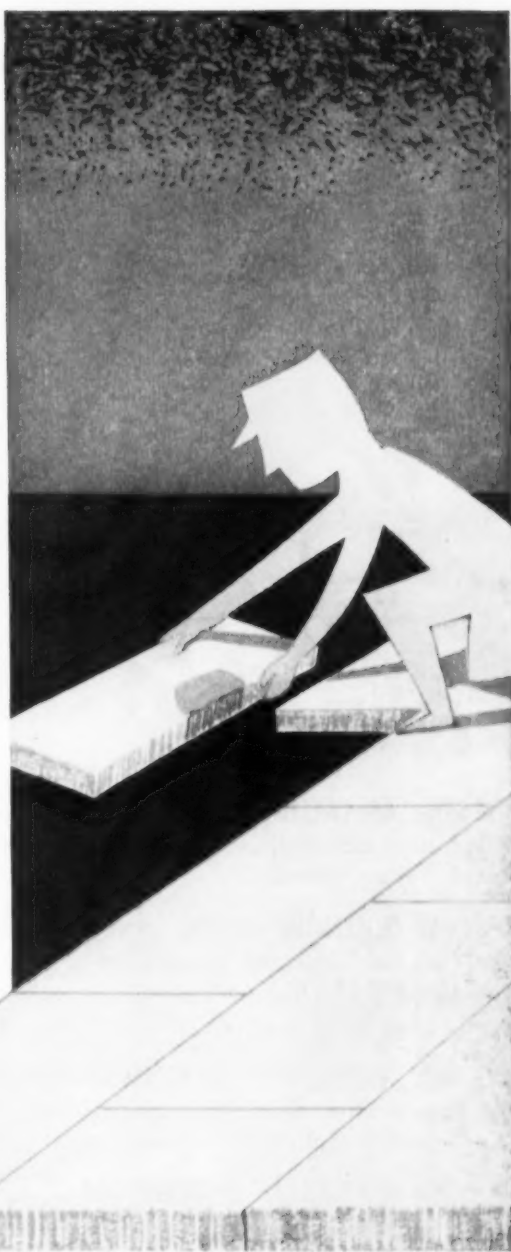
Armalite is one of the many quality products in the full line of Armstrong Industrial Insulations. Armstrong also offers you a complete contracting service geared to install these materials economically and efficiently.

For full data on Armalite or any other Armstrong insulating material, send for free booklets. Check the ones you want on the coupon below.

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INDUSTRIAL INSULATIONS

for temperatures from -300° F. to 3000° F.



☐ Armstrong LT Cork Covering for Cold Lines

☐ Armstrong Corkboard for Low-Temperature Rooms



☐ Armstrong Armaglas** Insulations for Low-Temperature Rooms

☐ Armstrong Armalite, a New Foamed Plastic Insulation for Low-Temperature Rooms

*TRADE-MARK

Armstrong Cork Company
2108 Rumford Ave.
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Please send me the free booklets checked. ☐

Please have an Armstrong representative call. ☐

Name

Position

Company

Address

City Zone State

**T.M. ARMSTRONG CORK CO. MANUFACTURED BY OWENS-CORNING FIBERGLAS CORP.

The PERFECT FOURSOME for ALL Air Conditioning Installations

...FOR COMPLETE RELIABILITY and ACCURATE CONTROL...

Sporlan
has a foursome
to take care of
any
air-conditioning
installation...
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The SPORLAN CATCH-ALL Filter-Drier will protect the entire system from moisture...acid...sludge and foreign substances found in many systems.

SPORLAN SOLENOID VALVES...The power packed Blue Seal Coil minimizes the possibilities of electrical failures. The simplicity of design and sturdy construction afford Peak Performance always.

SPORLAN THERMOSTATIC EXPANSION VALVES for air conditioning... The famous Flow-Master element practically eliminates valve hunting and the worry of alternately flooded and starved evaporators.

SPORLAN REFRIGERANT DISTRIBUTORS assure uniform distribution regardless of load...number of circuits...or evaporator temperature. The interchangeable nozzles give them flexibility and a wide range of applications. The perfectly designed conical button assures even distribution to all circuits.



the Sporlan Catch-All...Solenoid Valve...Thermostatic Expansion Valve and Refrigerant Distributor, you will get Peak Performance right down the line...

See your Sporlan Wholesaler TODAY

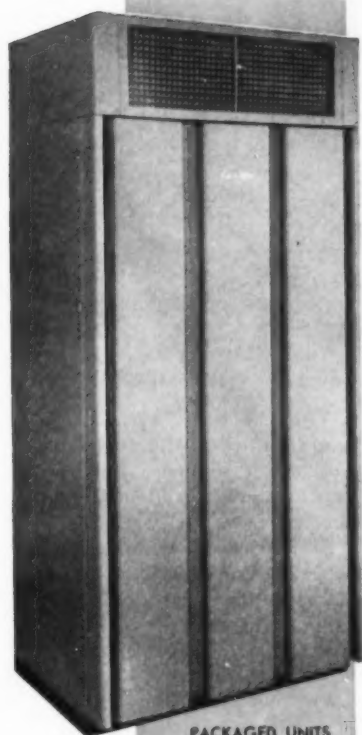
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Circle No. 35 On Reader Service Card

AUGUST, 1957 • COMMERCIAL REFRIGERATION



PACKAGED UNITS
3 THRU 20 TONS

A *Curtis* FRANCHISE

MAY BE THE ANSWER!

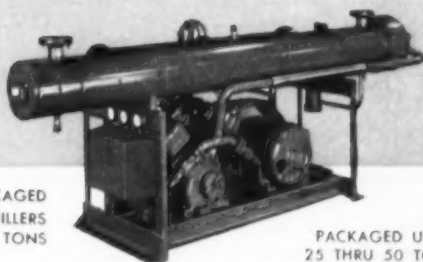
Curtis has been in business for 103 years and through experience has learned how to maintain a mutually profitable relationship with our franchise holders. Curtis equipment is competitively priced, quality built, and nationally advertised.

Write for details

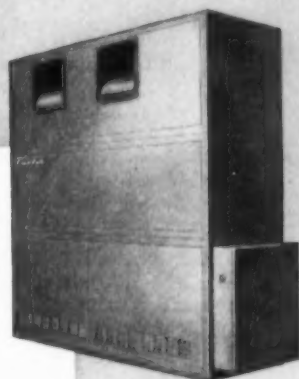


PACKAGED AIR
COOLED UNITS
UP TO 7½ TONS

LOOK AT THE CURTIS LINE



PACKAGED
LIQUID CHILLERS
UP TO 100 TONS



PACKAGED UNITS
25 THRU 50 TONS
INTEGRAL EVAPORATIVE
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CAN COUNT ON
REMEMBER...
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Curtis

OUR 103rd YEAR
MANUFACTURING COMPANY
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1915 Klenlen Ave. St. Louis 20, Mo.

CM-18



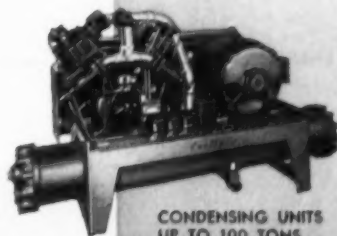
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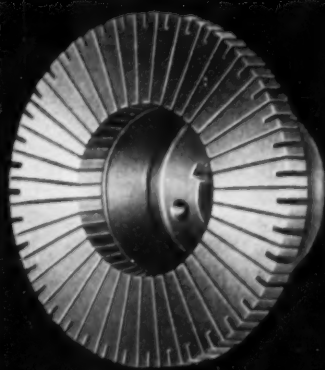


AUTO LIFTS



CONDENSING UNITS
UP TO 100 TONS

**FOR
LONGER
SERVICE
LIFE...**



always replace with genuine WAGNER COMMUTATORS

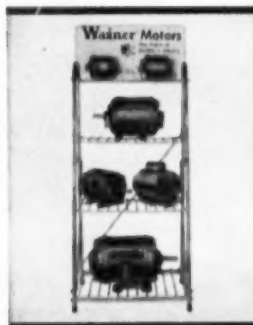


GENUINE JOE SAYS:

Wagner Replacement Commutators will last for years and years. That's because they're built with care to provide the extra strength needed for longer life. They're high-speed tested to withstand great centrifugal force. And they're safe to reface, too.

You get these 5 important features.

1. Mica washer insulates commutator from the short-circuiting ring.
2. Short-circuiting ring is made of brass.
3. Bakelite washer insulates short circuiting ring from commutator hub to eliminate harmful shaft currents.
4. Reinforcing steel shell.
5. Entire assembly is molded in high impact phenolic compound.



BOOST YOUR MOTOR REPLACEMENT SALES WITH THIS MERCHANDISER

Sell Wagner Motors to replacement-minded customers with the "sale at first sight" aid of the Wagner Merchandiser... colorful, chrome-plated display stand. Just \$9.95 with your order for any 10 Wagner Motors in one lot. Check into this deal today.



WAGNER ELECTRIC CORPORATION
6442 Plymouth Ave., St. Louis 14, Mo., U. S. A.

MOTORS • BEARINGS • STANDARD ROTORS
BRUSHES • CAPACITORS • COMMUTATORS

OVER 950 AUTHORIZED SERVICE STATIONS OR PARTS DISTRIBUTORS

Circle No. 32 on Reader Service Card



The "health" appeal, although one of the basic approaches, is still one of the best ways to sell air conditioning equipment to homes.

This approach is so basic, in fact, that many air conditioning dealers, in the rush to match competitors who are selling low-low price, seem to have temporarily forgotten about it.

Why not try selling "health", for a change? Instead of talking price, sell the customer on some of the real benefits of air conditioning to himself and his family — better growth, better health, and healthier working conditions? These are some of the ideas advanced by E. A. Tracey, general manager of the room air conditioner division of Mitchell Mfg. Co.

• • •

Here are some basic facts that dealers can use in up-grading their prospects, as compiled by the Mitchell Research Foundation:

Better health. Since 50 to 60% of the blood pumped by the heart is diverted to surface cooling, the heart beats faster as the temperature rises. This action helps rid the body of excess heat as the thermometer approaches the 90's, but it also burdens the heart with as much as 7 to 10 times as much extra work as it would pump at more normal temperatures in the 70's.

Also, the filtering action of a good air conditioner removes more than 90% of pollen, dust and other foreign matter from the air, thus aiding those who suffer from hay fever and other allergies as well as asthmatic attacks.

Better growth. Surveys among children show that only a few degrees change in average temperature is enough to slow growth perceptibly. For example, scientists found that children in Wisconsin averaged a full inch taller than those in the warmer climate of Missouri. Those in tropical Manila averaged as much as 2 inches shorter than Filipino children raised in the northwestern U.S. in a cooler average temperature.

Healthier working conditions. Speed and accuracy both suffer as the temperature climbs. A man doing heavy factory labor is only half as efficient working at 100 F temperature as he is when working at a 70 F temperature.

The same holds true of the housewife going about her daily tasks of cleaning, cooking and taking care of the family wash. With air conditioning to keep the temperature in the comfort zone, she would get her work done in half the time, and be much more refreshed than her air conditioning-less neighbors.

* * *

The same is true of the executive who must bring work home from the office. The man with the air conditioned room or house could complete his work in half the time as the man without air conditioning.

Tests conducted among students at a large midwestern university during winter and summer showed that the students suffered an average mental deficiency of 40% during the hot, humid summer months. With more and more students going to summer school, air conditioning would seem to be much more conducive to doing homework, and much more time-saving. This would mean more time for outdoor summertime activities.

* * *

Other benefits of air conditioning which can be utilized to help sell the prospect up are the natural appeals of comfort and a more harmonious home atmosphere.

Air conditioning — especially the room air conditioner segment of it — has grown rapidly, but

price (temporarily, at least) seems to have gained the spotlight in recent months. Nobody can make money by cutting prices — and many dealers seem to have overlooked a number of possibilities for selling-up their air conditioning prospects and improving their profits.

After all, despite the fine growth that air conditioning has shown, it is estimated that only one home in 20, or some 5% of the potential market, is air conditioned.

As Mr. Tracey says: "A return

to the basic approaches of health and comfort is still a new story to many an unsold customer, and a story which means attention to top-grade unit and long-term customer benefits rather than short-term discount rates."

MARLO NAMES NEW AGENT

Marlo Coil Co. has appointed Dale Weitman & Co., Beloit, Wis., to represent its line of air conditioning and heat transfer equipment in that area.

Insulbond!

A new LAYKOLD adhesive for bonding impervious insulation blocks



After mixing, INSULBOND soon develops a buttery, easy-trowelling consistency.

INSULBOND is the new cold-applied, fast-setting cement specifically developed for bonding moisture-impervious insulation materials.

INSULBOND sets without moisture dissipation; holds blocks firmly in place.

INSULBOND is easy to prepare on the job. Just mix cold, fluid, special Laykold® binder and Lumnite Cement. The resultant mix soon becomes "buttery" and ready for spreading. Blocks are then set in place and adhesive allowed to cure.

Use the coupon for full technical data.



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American Bitumuls & Asphalt Co.
P. O. Box 3495, San Francisco, Calif.

- ☐ Please send me specification G-35 covering the use of INSULBOND.
- ☐ Please send me information on all your insulation adhesives and coatings.
- ☐ Please have your Field Engineer contact us.

Name

Company

Address

City & State



Lock No. 4722



*announces the first major improvement
in locks since "Living Action"*

THE **ALL NYLON BOLT**



*"My customers go for
the quiet, solid 'click',
the smooth action.
I go for the
trouble-free operation!"*

Here is a brand new development in lock construction that really gives you something to sell! The new nylon bolt gives smoother operation . . . is quieter, longer wearing . . . makes doors easier to open and close with its "lubricated" action. Positive gasket seal is assured by our famous "living action" grip.

In addition, nylon is a non-conductor of heat or cold, does not mar strike. And GRBC gives you the superior copper-nickel-chrome finish, easy mounting design and trouble-free operation that let you keep your profits.

This combination of real, demonstrable advantages gives you more to sell . . . keeps on selling for you.

For further details on Lock #4722 and other surface and edgemounted commercial refrigeration hardware write, wire, call

GRAND RAPIDS BRASS COMPANY

Division of Crampton Manufacturing Co.

GRAND RAPIDS, MICHIGAN

Circle No. 34 on Reader Service Card

AUGUST, 1957 • COMMERCIAL REFRIGERATION

A NEW APPLICATION GUIDE

by



to help you select
**Electric
Motors**



This handy Guide is carefully planned to make it easy for you to select electric motors for all popular applications. Using the convenient tables inside, you simply start with the equipment or machinery you want to drive.

Then, you identify the character of the load, starting and running torques, frame type, speed, etc., to arrive at precisely the right motor for your specific application. In just a few moments you know the motor type you need, the dimensions and other pertinent data.

Because Century offers a complete line, this handy manual will guide you to the right motor for your application. Obtain your own copy of this 12-page reference manual.

MAIL COUPON

TODAY FOR

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1806 Pine St., St. Louis 3, Mo.

Please send me the new Century Application Guide CE-99.

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Company.....

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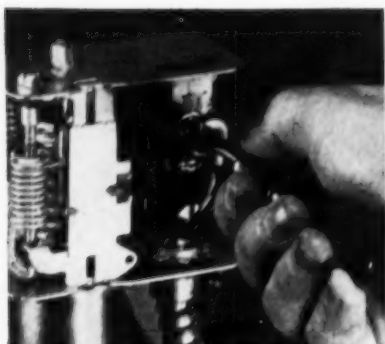
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**Performance-Rated[®]
MOTORS
1/20 to 400 HP**

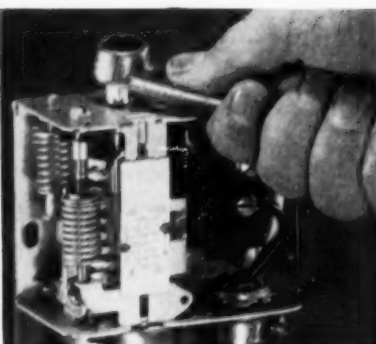


CENTURY ELECTRIC COMPANY

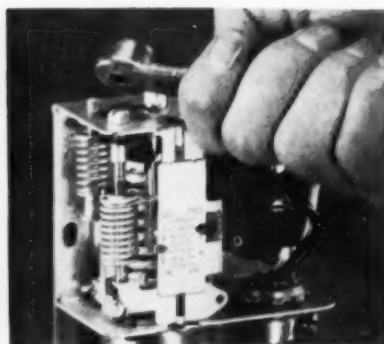
1806 Pine Street • St. Louis 3, Mo. • Offices and Stock Points in Principal Cities
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1. Mount control (bracket furnished), connect capillary, remove control cover and make 2 electrical connections (terminals are completely accessible).



2. Turn the range screw to either raise or lower the cut-in setting as required... differential does not change.



3. Turn differential screw to raise or lower cut-out setting independently of cut-in setting. This widens or narrows the differential.

Easier to Install...

Simpler to Adjust!

PENN "270"

SINGLE-POLE REFRIGERATION CONTROL



Series 270 is available in a variety of models for every refrigeration job.

Combines simple design with
PENN "Snap-flex" contact action

Installation is so simple and fast with the Series 270. And, adjustment is even simpler because of Penn's direct-reading, calibrated scale indicating cut-in and cut-out settings. Time-wasting subtraction or addition is eliminated.

Once installed, the Series 270 will perform accurately and stay-on-the-job longer. One reason is the exclusive, "Snap-flex" contact structure with

"roll-wipe-snap" action on closing and opening. There's no bounce... no closing arc... no welding of contacts.

Try the Penn Series 270... in either single or double pole... on your next job and you'll discover a big difference. Ask your wholesaler for Penn.

PENN CONTROLS, INC. Goshen, Indiana

EXPORT DIVISION: 27 E. 38th ST., NEW YORK, N. Y.

AUTOMATIC CONTROLS FOR HEATING, REFRIGERATION, AIR CONDITIONING, APPLIANCES, PUMPS, AIR COMPRESSORS, ENGINES

Circle No. 36 on Reader Service Card

IBANU'S

TRENDS · OPINIONS · REPORTS



MEET THOM MUIR. Thom has just assumed the position of General Manager of COMMERCIAL REFRIGERATION & AIR CONDITIONING Magazine. He comes to us with a wide range of experience in the heating-air conditioning-refrigeration field. Thom's education in the industry has been basic and thorough. He started from the bottom and worked his way up to a succession of executive positions.

His first job in the field was as a door-to-door canvasser for a national heating concern. His success at this level led him to join the organization of a heating dealer near Pittsburgh, Pa. In this connection, Thom functioned in just about every possible capacity — he sold, he installed, he serviced.

To broaden his background he left the retail end of the business to become Sales Manager of the heating division of Anchor Distributing Co. in Pittsburgh. Here his retail experience gave him a common talk-

ing point with the many dealers he called upon.

In 1952 he joined Airtemp Div., Chrysler Corp., as District Manager in Washington, D. C. His principal function was establishing distributors in the District of Columbia, Virginia, and Maryland, and assisting these distributors in the building of their dealer organizations. Later he performed the same function in Cleveland, Ohio.

In 1955 he was transferred to Airtemp's office at Dayton, Ohio, where he took up the duties of Merchandising Manager for commercial air conditioning. A year later he assumed the additional duties of Merchandising Manager for residential heating and cooling. He left this position to join the staff of COMMERCIAL REFRIGERATION & AIR CONDITIONING.

Now Thom's cross section of industry experience at the dealer-distributor-manufacturer levels will be effectively employed to make this magazine of increased practical assistance to its more than 30,000 readers. Starting next month, Thom will take over this page with a message of his own, aimed at helping COMMERCIAL REFRIGERATION & AIR CONDITIONING become an even more important sales tool.

AIR CONDITIONING can result in increased profits for small manufacturers through reduced accident rates, improved employee relations, and increased efficiency and production, according to a leaflet by Small Business Administration. The technical aid warns that if a business contemplates air conditioning, the firm should not attempt a "do it yourself" installation. "An air conditioning system which is properly engineered and installed will be a sound investment, whereas one which is either inadequate or excessive in capacity will be a source of continuing annoyance and expense," the publication says.

NEARLY 75% of New York city business offices are air conditioned, a survey of the Office Executives Association of New York shows. Based on a representative 293 companies within the association, the report shows 201 completely air conditioned, with an additional 16 partly air conditioned. Of these, almost 60% were taking steps toward the purchase and installation of units—24% actually installing units this year, or during 1958.

WORTH NOTING by all refrigeration firms selling equipment for the preservation of frozen foods is a recently released marketing report of the U.S. Department of Agriculture showing that prepared frozen food production during 1955 exceeded half a billion pounds, up 60% over 1954. Especially significant is the fact that over 80% of the pack is sold in retail stores. One of the biggest stumbling blocks in the way of further growth of these products, the report indicates, is the limited low-temperature cabinet space available in these retail stores. All of which puts the ball squarely in the hands of the commercial refrigeration distributor!



Call Me at ADams 3-0966
Sales — **L. H. KIEFER** — Service
Highgrade Air Conditioning
Commercial Refrigeration
Gas and Oil Heating
Equipment



Complete Planning and Engineering Service
800 EAST MAIN STREET
BELLEVILLE, ILLINOIS

FEBRUARY • 1956

1 2 3 4 5 6 7 8 9 10 11 12
13 14 15 16 17 18 19 20 21 22 23 24 25
26 27 28 29



Cheesecake and Chuckles

... that's the foolproof formula employed by this southern Illinois dealer to make sure his steady stream of direct mail pieces are read — and remembered

PARLAYING the undisputed appeal of cheesecake art, an irresistible touch of humor, and the timeliness of a calendar has made the monthly direct mail pieces sent out by L. H. Kiefer Sales & Service Co. the major source of both commercial refrigeration and air conditioning contracts for this Belleville, Ill., firm.

Lee Kiefer, head of the firm, has been a refrigeration dealer and contractor for 30 years. Some 20 years ago he entered aggressively into all phases of the air conditioning business as well. During the last 10 years, however, he has divorced himself completely from residential air conditioning, and has concentrated all his merchandising efforts on the commercial market, in air conditioning as well as in refrigeration.

From his handsome showroom in this southern Illinois community, Kiefer has built up over the years a substantial volume in both phases of the business,

ranging all the way from single unit installations to large engineered systems. He has done it, he insists, primarily on the basis of his carefully built reputation for sound engineering, and the fact that he keeps after his prospects continuously.

Located in an area that includes many small cities spread in every direction around his Belleville headquarters, Kiefer has, of course, been unable to make all of his contacts on a personal call basis. Consequently, several years ago he decided upon direct mail as his most consistently effective link with his prospects. Since that time, the Kiefer organization has maintained a continuous barrage of direct mail pieces aimed at building owners, professional men, food stores, building contractors, retail shops, clubs, hotels, theaters, motels, and other logical prospects for his products.

If there is one form of direct mail which has univer-

sal acceptance in the commercial field it is "cheese-cake", Kiefer has found on the basis of his extensive experience. Therefore, year after year his direct mail has consisted of calendars, each of which features an attractive young lady variously (but always scantily) attired and intriguingly posed.

Effectively combined with this calendar is a touch of humor, in one form or another, and a personal message from Kiefer himself highlighting one or more of his products or services. These messages are usually kept deliberately on the light side, but pack a potent sales wallop, nonetheless. An accomplished humorist, this Illinois contractor mixes local news, a bit of whimsy, and a lot of good common sense into a hard-hitting selling message that generally is read down to the last period.

Typical of the highly personalized nature of these messages is the copy for one of his first-of-the-year messages reproduced with this article. Note how deftly he combines homely philosophy and personal anecdotes with a strong mid-winter pitch for air conditioning business. The seasonal appeal is strongly evident in all his selling copy, as befits a calendar type of promotion.

From February on, still following a light and humorous vein, Kiefer's messages harp on the forthcoming torrid summer temperatures and urge the prospect to do something about his air refrigeration and conditioning needs now. He plays up such slogans as, "Control of Temperature Is Our Business", and "Your Comfort and Profit Is Our Greatest Return".

Occasionally he cites figures on how a particular business has profited after installing refrigeration or conditioning equipment, with a testimonial from the owner himself included. He places strong emphasis on the wisdom of buying cooling equipment "before the rush", from January through May. Then in June he switches over to concentrating on the merits of his firm's service facilities.

When the hot summer season is on the wane, he "strikes while the iron is hot" by reminding his 500 or more monthly "readers" to eliminate their high-temperature problems for next year by installing adequate cooling equipment now. A typical October mailing points out, "Everybody talks about the weather — We are in a position to do something about it."

A similar sort of mailing piece is used for selling automatic heat, which Kiefer likewise handles. A typical piece of humor included in this printing admits, "Sure, it will cost a few bucks, but it will increase your comfort, benefit your health and temperament, and change you back into the swell guy your wife knew before she married you."

All of Kiefer's direct mail is pungently dedicated to getting the job during the off season. In September, after an especially hot summer, a mailing piece may be headlined, "I Told You So". This theme is continued in succeeding months. Everyone is reminded of how hot it was the previous summer, and advised to get busy on their cooling plans before the same thing starts all over again.

"Some of you prepared early and have enjoyed the full benefit of air conditioning all summer," a typical piece of copy reads, "but many waited until it was really hot and then wanted immediate delivery and installation. We did the best we could, but it was far short of being enough to help everyone, so many people bought some sort of compromise jobs or did without.

"It will be hot again next summer, but we will have time this fall and winter to do the right kind of job without haste, and you will save money by buying on the off season. Remember, we can cool your home, your office, or your place of business if you will only give us the GO sign. You had better call us now before you forget it again. Our free survey and estimate does not obligate you to buy."

For last year, Kiefer, who spends an average of one day per month writing up his direct mail messages, switched to a smaller mailing piece in the form

Continued on page 100

SALES MESSAGE is not ignored in Kiefer's promotion pieces. Note how effectively this typical calendar copy employs the personal touch.

JANUARY — HAPPY NEW YEAR INVENTORY TIME — INCOME TAX NEW PLANS — HEADACHES

What Fools we Mortals can be, Slaves to Custom, Slaves to this thing called Progress, burning up our lives at both ends and in the middle all at one and the same time just to Keep Up With The Jones's.

Sure, we made some money last year even when we thought things were looking bad and we had doubts that we would be able to survive. We even bought a new car and got the Apple of Our Eye started to College. This year we plan to start building that New Home we wanted for so long. That's progress and for a man pushing 40 or 50 it is quite an accomplishment. CONGRATULATIONS but —

How many of your friends who celebrated last New Years Eve with you are now gone, victims of Heart Failure, etc. They were pretty hot stuff, too. The cemeteries are full of them.

A little more concern for your health and comfort will help to keep you around for a long time.

Air Conditioning in your home and place of business will really lengthen your life. We can PROVE it. There is no fun in being the richest man in the cemetery and we certainly would like to see you stay around because we like you.

Call us NOW, while we have plenty of time to discuss everything thoroughly. You'll never regret it.

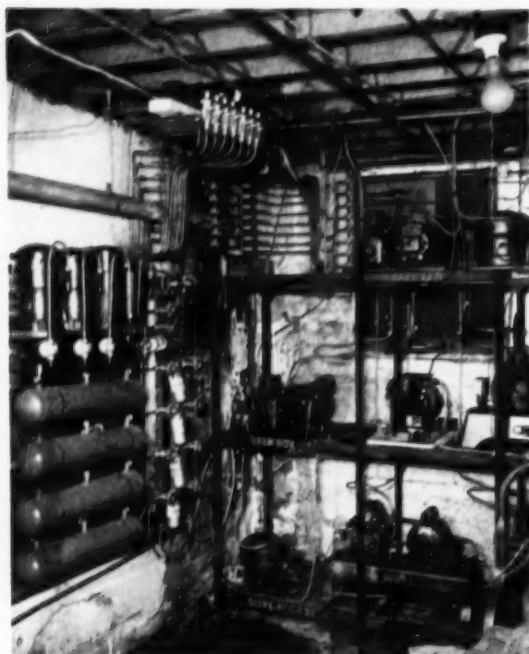
CALL ADams 3-0966

Sales — L. H. KIEFER — Service

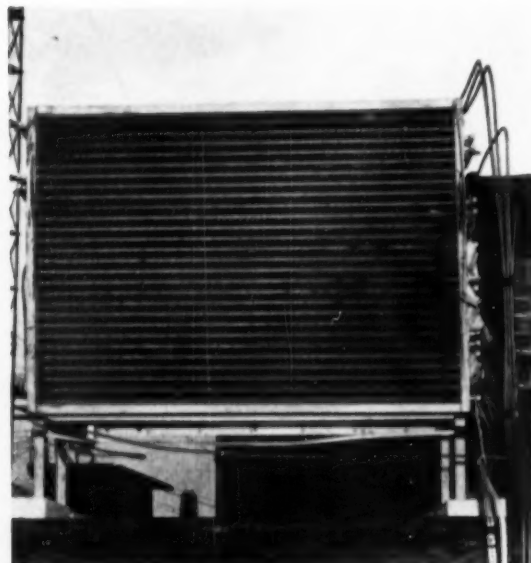
Comfort and Profit for You Is Our Principal Concern

Contractor Consolidates Restaurant's Cooling Facilities in

"OPERATION CLEAN - UP"



STEP 1: All eight compressors powering the restaurant's various pieces of refrigeration and air conditioning equipment were relocated on a triple-tiered rack to save space and facilitate maintenance. Panel board at left was designed to hold all accessories.



STEP 2: Eight separate circuits tie all of the compressors into this 9-ton air cooled condenser mounted on the roof. Condenser was placed to take full advantage of prevailing winds.

PROBLEM:

Cantor's Restaurant, a well known Pittsburgh, Pa., dining place catering largely to residents of the city's Civic Center, had, like Topsy, "just grown" as far as its refrigeration facilities were concerned. Over the years, this equipment had been acquired fixture by fixture and unit by unit as the restaurant's steadily growing volume of patronage demanded, without any thought of an integrated over-all plan.

As a result of this helter-skelter development, conditions finally became so critical that the restaurant's management decided to sit back and take stock of the situation. They found that the motley collection of both air cooled and water cooled units, each installed on the basis of expediency rather than of planned efficiency, not only occupied valuable space drastically needed for the restaurant's operations but also radiated an objectional quantity of added heat into certain operating areas.

SOLUTION:

In order to bring some sort of system out of the existing chaos, the owners of the restaurant called in a local firm of refrigeration and air conditioning contractors, Olsen & Ley Co. Engineers of this firm took one look at the scramble of cooling equipment and decided immediately that the logical approach would be to convert the entire system to air cooled operation.

First move in this direction was the erection of a three-tier compressor rack to hold all of the machines powering the various pieces of refrigeration and air conditioning equipment. A panel board to hold all accessories for these units was mounted on the wall adjacent to the compressor rack.

Next, a 9-ton Halstead & Mitchell air cooled condenser was mounted on the roof of the building, and each compressor was connected to this condenser by means of copper tubing. This involves a total of eight circuits, with the air cooled condenser handling two $\frac{3}{4}$ -hp, three $\frac{1}{2}$ -hp, and one $\frac{1}{3}$ -hp compressors operating at 20 F suction temperature, and one $\frac{3}{4}$ -hp and one $\frac{1}{2}$ -hp unit operating at -10 F.

RESULT:

The entire job took two men approximately three weeks to complete. The additional floor space gained by triple-decking the compressors and wall mounting the accessories provided new freedom of movement for restaurant personnel. Elimination of the excess heat load imposed by the refrigerating machinery improved the restaurant's operating conditions and bettered personnel relationships.

Have you discovered why
SERVICEMEN NOW PREFER

Mortite **CAULKING CORD**
 and **CAULKING GUM**

for every Sealing Job?

Acceptance Proves It! From coast-to-coast refrigeration service and maintenance men have discovered two great MORTELL products which give them price, convenience and quality advantages *unmatched* by any other compound on the market today. Now, sealing and caulking jobs are finished faster, better and at much less cost than ever before!

"Tool Kit" Size! Both *Mortite Caulking Cord* and *Mortite Caulking Gum* come in handy cylindrical containers—easily fit into any crowded tool box, large or small. These compact containers have been designed by working refrigeration servicemen to eliminate product waste resulting from flimsy, bulky packages.

**THESE FACTS
 TELL THE DIFFERENCE!**

MORTITE CAULKING CORD— $\frac{3}{16}$ " rope-like strands always retain the consistency of modeling clay. Non-staining, Mortite White in color—may be painted *immediately* after application. Three compact 8-strand 16-ft. rolls can be unwound one or more strands at a time without unwinding entire roll.

MORTITE CAULKING GUM—Provides the perfect answer for the serviceman who needs a bulk caulking compound to hand mould into beads, wads, gaskets, etc. One pound slug ($2\frac{1}{2}$ " x 6") never cracks or hardens—adheres to any clean, dry surface through normal temperature ranges.

Mortite Caulking Cord or Mortite Caulking Gum will do the job better than your present caulking compound at a fraction of your present cost. Write today for complete information about these two products and the complete line of Mortell refrigeration products.

JW Mortell
 COMPANY
 Makers of Famous NoDrip Tape and Shirts

J. W. MORTELL CO.
 533 Birch St., Kenilworth, N. J. Dept. 2
 O.K. Send me full information about the complete line of Mortell refrigeration products.

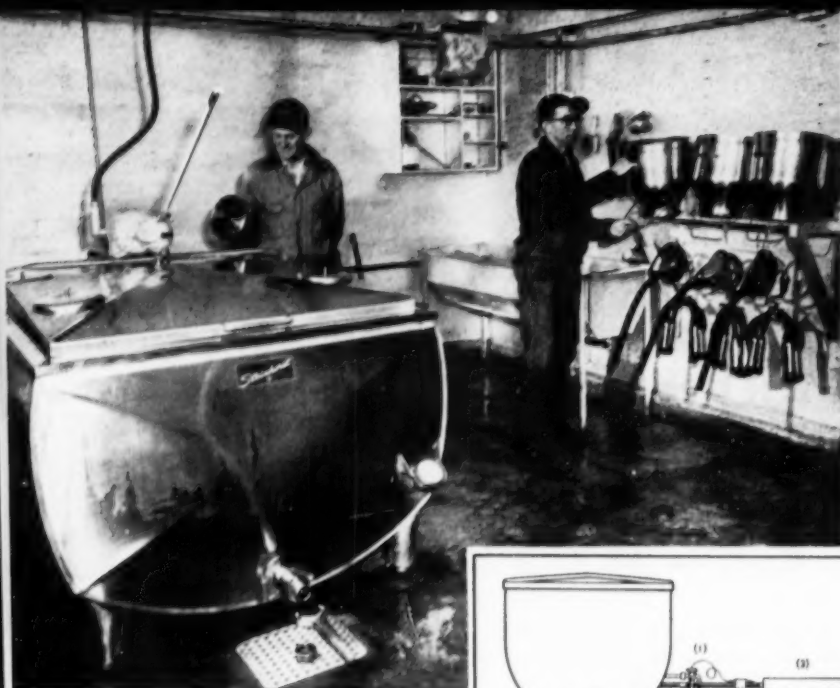
I'm a _____ Jobber _____ Dealer
 _____ Serviceman

Name _____

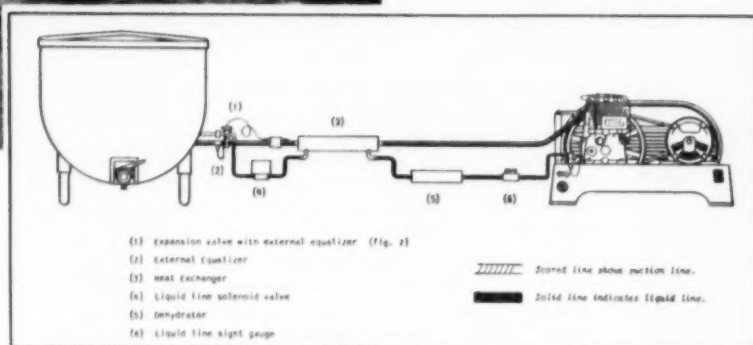
Address _____

City _____ State _____

*Mail
 Coupon
 Today!*



by **M. W. Stoms**
Chief Application Engineer
Brunner Div., Dunham-Bush, Inc.



TYPICAL of the current trend toward bulk milk cooling on American farms is this 300-gallon installation in New York state. A remote condensing unit was selected for this installation because of space requirements. The owners expect retirement of their investment in less than five years.

The fast growing switch from can cooling to bulk cooling of milk provides enterprising refrigeration dealers with a brand new way to . . .

Cash In on the Farm Market

THE switch-over from old fashioned can coolers to sleek bulk milk refrigerators is changing the dairying picture from coast to coast. In New York State alone, there are at present 2000 bulk milk cooling installations on private farms. Yet it is reliably estimated that this is only 5% of the potential market, and that at the present rate we will see the other 95%, 38,000 coolers, installed in the state within five years! The same story is repeated in dairying areas from coast to coast.

Why is the American dairy farmer leaping on the bulk milk band wagon? The answer lies in

economy and a reduction in drudgery. By setting up his own cooler, right in his milkroom, the farmer can get a higher price for milk that is better; he pays less for hauling; and he saves himself the job of wrestling around heavy milk cans.

Before the advent of bulk milk cooling, the farmer's milk cans had to be picked up frequently by flat body trucks. Now he can go on every-other-day schedule, with his milk pumped from his cooler directly into a modern tank truck. He eliminates the wastage of warm milking sticking to the shoulders of the milk cans. Problems of ris-

ing bacteria counts are eliminated and his milk even tastes better.

In New York state, the average operation reports an increase in the bulk milk cooled price of 20¢ per hundred weight — this is usually allocated at a 10¢ premium from the dairy, another 7¢ because of a 1/10 of 1% increase in cream content and a 3¢ credit in reduced hauling charges. This 20¢ is important to our industry because it frequently means that installation investment will be self-liquidated in approximately five years.

The savings in labor are more difficult to estimate on the small

farm. An 800-gallon tank, however, serving a herd of 135 milkers, is figured by the owner to be saving 5 man-hours a day. This is certainly a significant factor in this era of uncertain farm help.

Developed in 1938, the bulk milk cooler was originally a simple storage tank. Today's model is a stylish stainless steel tank, calibrated for accurate measurement. Usually consisting of a liner inside an insulated housing, the tank has an agitator blade powered by a $\frac{1}{4}$ hp motor. Current efforts are directed toward making the blade do double duty in an acceptable tank-washing system.

The tanks may cool by direct expansion or icebank. Many are packaged installations, including condensing unit, although unusual size or space requirements may dictate remote components. Factors in the choice of air, water or combination cooled condensing units include availability and quality of water supply, winter temperature of milk room and cost.

Load Calculations Are Easy

Capacity of the tank is largely governed by two factors—frequency of pickup and volume of milk at peak milkings. If every-other-day pickup is available, the tank should be designed to hold four milkings. This, incidentally, permits the small producer to get in on the act. For daily pickup, the tank should hold two milkings. An alternative is to prepare for three, making possible an every-other-day schedule during non-peak periods.

A rule of thumb gives pretty good results on recommending compressor horsepower. The two factors here are method of tank-cooling and schedule of pickup. Direct expansion with water-cooled condensing unit calls for 1 hp for each 100 gallons of milk on a daily pickup, $\frac{1}{2}$ hp for 100 gallons for every-other-day. Air-cooled condensing units require slightly more capacity in either case. With ice bank, an air-cooled compressor is usually recommended, with $\frac{1}{2}$ hp per 100 gallons on a daily schedule, $\frac{1}{4}$ hp for every-other-day.

Boom Town Bakery Finds Freezing Is Answer to Production Problems

A \$5000 investment in sub-zero refrigeration equipment by Vic's Bakery, Grand Junction, Colo., has proved a practical means of keeping this bakery's production in step with the sales demands imposed by the community's fantastic increase in population.

Situated on the western slope of the Rocky Mountains, Grand Junction lies in the heart of a recently developed uranium mining area. Almost as soon as transient miner Vernon W. Pick hit his now famous lode, which was sold for \$10 million, the town's population began growing, and within the space of two years more than 5000 families had moved in. Even today, some 45 to 60 new families per month are registered on the city clerk's list.

The effect of this population boom on Vic's Bakery, located in the center of the downtown district was overwhelming. Clamoring customers line the counters daily, and their demands for baked goods taxed the firm far beyond its capacity.

To meet this suddenly and drastically changed situation, Victor Colony, owner of the bakery, took two important steps.

First, he arranged to install branch stores in two local supermarkets. This at least partially solved the serious parking problem which had arisen at the main shop, where scores of jeeps, trucks, drilling rigs, and a wide variety of other vehicles frequently used to clog the streets around the bakery during business hours.

Next, and more importantly, he invested \$5000 in an 8-door reach-in refrigerator which he located against one wall of the retail store (for lack of space elsewhere), and a 10' x 10' walk-in cooler in the basement. The walk-in, powered by a 3-hp compressor, is capable of maintaining temperatures as low as -15 F, while the reach-in can be operated at zero.

Now, with these added refrigeration facilities, the bakery is able to concentrate its production on Tuesdays and Thursdays, the two "slowest" days of the week. On these days, a complete inventory of baked goods, with emphasis on cakes, is produced and frozen to help ease the firm over the business hump during the remainder of the week.

In this way it has been found possible to virtually eliminate embarrassing "run-outs", which previously had been frequent causes of lowered profits and customer ill will. In fact, Colony claims, as a result of the new facilities for baking and freezing during slack periods, his bakery hasn't had to dissappoint a customer for more than a year.

Actually, Colony was no stranger to the advantages of frozen baked goods. More than eight years ago, in fact, he had discovered that cakes could be frozen and held at sub-zero temperatures for weeks before being placed on sale with perfect acceptance by the local trade. Now, however, since the advent of the uranium boom and the consequent upward surge of the community's population, he is finding the freezing of baked goods not just a convenience but an absolute necessity in matching the production facilities of his shop to the steadily expanding customer demand.

**you get
the service
you want
when you
specify United
Service* Tube**



However your order arrives — by phone, mail or telegram — your shipment starts immediately. It's here today . . . gone today!

And check this new United Service Tube carton. Punch-out handles (a) for easy carrying. Punch-out holes (b) makes it simple to remove from box or shelf.

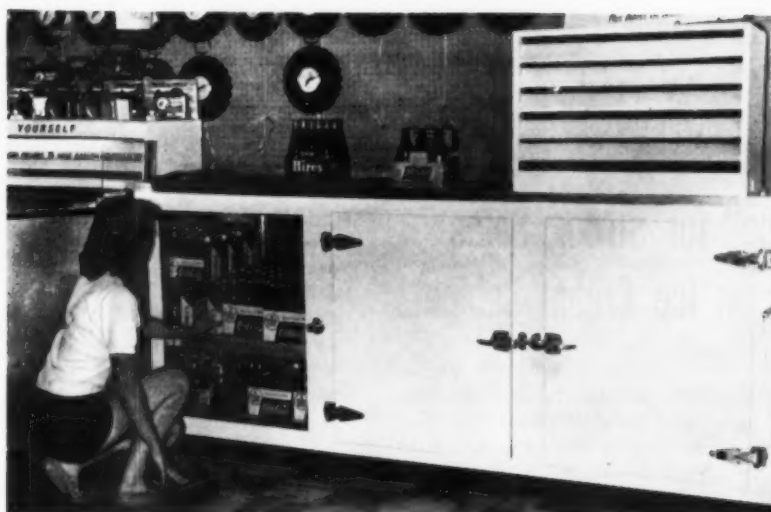
Call, write or wire United for copper, brass and aluminum tube and wire.

**Water, Refrigeration and Automotive*

UNITED WIRE
AND SUPPLY CORPORATION
PROVIDENCE 7, RHODE ISLAND
FOR A PERMANENTLY UNITED
JOINT, INSIST ON PHOSON



Circle No. 38 on Reader Service Card



PROBLEM:

Provide a drugstore with adequate cooling facilities for bottled beverages in space too small to permit use of any standard reach-in cabinet.

SOLUTION:

Revamp an old back-bar refrigerator by adding a new cooling coil and mounting the remote compressor on top of the cabinet in a well ventilated protective enclosure. Refinish complete unit in white enamel to improve appearance.

If standard fixtures won't fit . . . IMPROVISE!

A 350% increase in the sale of bottled soft drinks has been achieved at the Mar-Lee Rexall drug store in Denver, Colo., thanks to the ingenuity displayed by a local refrigeration contractor in converting an outmoded back-bar refrigerator into a handy self-service carbonated beverage cooler.

Shortly after its opening, the Mar-Lee store found itself literally swamped with summer-month demand for cold bottled drinks at ready-to-use temperatures. There was little space in the store for extra refrigeration facilities. Certainly a walk-in cooler was out of the question, and the limited amount of refrigeration capacity at the soda fountain was necessary for fountain drinks.

That was the situation when Joe Wise, owner of the store, sent a hurry-up call to Arctic Refrigeration Co., a Denver refrigeration firm with a reputation for "tackling the tough jobs".

In surveying the situation, the contractor found a relatively small amount of space on the right wall of the store, between a telephone booth and a merchandise gondola, that might possibly be used for installation of a refrigerated self-service case. There was not sufficient aisle space to allow the installation of a standard reach-in display case, but it finally was decided that there was adequate space for an unusually shallow refrigerator of some sort which would make possible the wide aisles desired by the management.

No standard unit available would fill the bill, but a bit of research into the equipment requirements uncovered a possible solution in the form of an aging back-bar refrigerator which had seen many years of service in one of Wise's previous stores. This case,

measuring 9' long by only 3' in depth, was equipped with three tight fitting latch-type doors. It had been designed to maintain proper temperature in the three compartments with a 1½-hp remote compressor.

Pleased with the immediate availability of this unit, Arctic engineers, suggested to the drug store owner that he modernize the old cabinet with a new coat of paint, new hardware, and additional refrigeration capacity, which would make possible maintenance of the desired temperature of between 40 and 55 F. It was felt that by installing an additional blower-type cooling unit at one end of the cabinet that the desired temperature could be achieved with a ¾-hp unit.

Some difficulty was experienced at this point because the drug store building had no basement, and leased stores on either side prevented remoting the compressor with lines of reasonable length. After considerable study, it was decided to locate the compressor right on top of the refrigerated cabinet, mounting it on a special combination of rubber blocks and coil springs to deaden vibration and sound.

The compressor then was housed in a louvered enclosure to conceal it from sight, protect it from tampering, and yet provide adequate ventilation for the unit. This enclosure then was finished in white enamel, as was the cabinet itself.

Completed at low cost, this tailor-made refrigerated cabinet dovetailed neatly into the drug store's open, self-service atmosphere, and proved able to accommodate around 25 cases of carbonated beverages, mixers, and similar products. This additional capacity permits the store to meet any normal customer requests for such bottled goods at "ready to drink" temperatures.

COMMERCIAL REFRIGERATOR SALES NEWS

Dairy Firms Seem "Ripe" for Strong Sales Effort by Dealers on Ice Cream Cabinets

AGREEMENT on the part of both distributors and manufacturers that now is the time for distributors to actively press dairy companies for refrigerator case sales was one of the major results of the most recent meeting of the joint manufacturer-distributor relations committee of National Commercial Refrigerator Sales Association and Commercial Refrigerator Manufacturers Association.

It was noted at this meeting that the efforts of NCRSA in working with the Federal Trade Commission to secure cease and desist orders that would prohibit dairy companies operating interstate from supplying their dealers with refrigerated equipment is having a favorable effect on this phase of the industry's sales.

The desire of dairy products dealers for a better type of ice cream cabinet to fit in with their other refrigerator cases also was seen as a factor in this situation. Furthermore, it was observed, the dairy companies themselves are anxious to be rid of the burden of supplying equipment to their dealers.

In view of these factors, it was agreed that an aggressive sales campaign on the part of distributors to get the ice cream case business in all areas should be effective. The feeling was expressed that such a program would not only net the dealers more cabinet sales now, but also could substantially further the notable trend toward the end of refrigeration equipment sales, gifts, or loads by the dairies to their dealers.

Among other matters discussed by the joint committee was the value of a 90-day service warranty as opposed to the 1-year warranty on commercial refriger-

ator cases. Manufacturer representatives made it plain that their only interest was in assuring the ultimate customer of proper service following installation of the equipment. The time limit involved, they agreed, depends upon each distributor and upon conditions in his area.

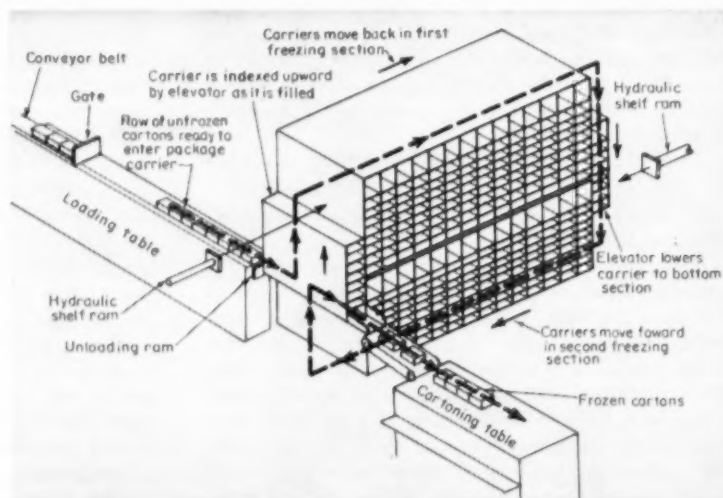
It was pointed out that all sales contracts must provide for the proper servicing of the equipment sold, and that the cost of this service (whether for 90 days or a full year) must be a part of the equipment cost to the customer.

Distributor members also discussed the notable increase in demand by their customers for detailed plans and complete store layouts. Many distributors, it de-

veloped, now make a practice of charging 3% of job costs for such plans, payable on receipt of the plans by the prospect. In some cases this charge is credited to the customer if the job is finally awarded to the distributor preparing the plans.

Other distributors indicated that they make no charge for plans because they actually do not provide detailed drawings and specifications until the job definitely is awarded to them. It was noted that in some areas charging for the plans may be dependent upon having an architect's license.

Harry A. Hattenbach, head of Hattenbach Co., Cleveland, Ohio, and vice president of NCRSA, addressed the committee on the importance to the food industry of the vital services performed by the distributors of commercial refrigeration and air conditioning equipment. He pointed out that recent advancements in the cooling industry's products makes it more important than ever for the food store industry to purchase such equipment from distributors qualified to handle the all-important installation and servicing functions. It was recommended that both manufacturer and distributor groups consider a program to



CONTINUOUS HARDENER designed for quick freezing gallon cartons of ice cream or packaged food products has been developed by Freezing Equipment Sales, Inc. Key features of unit include automatic loading and unloading, refrigerating by high velocity blast of air directed across packages, operation only on demand, and minimum space requirements. Schematic drawing shows how unfrozen packages are fed into first compartment of carrier by chain conveyor. When loaded, carrier indexes vertically. Next compartment then comes into loading position with conveyors. Operation is repeated until all compartments are loaded. Carrier then in raised position moves horizontally through cold tunnel. Entire tier of carriers is pushed by hydraulic ram.

educate the food store industry on value of purchasing refrigeration equipment through distributor channels.

Presiding at the meeting was J. W. Krall, president of CRMA and president of McCray Refrigerator Co., Inc., who currently is serving as chairman of the joint NCRSA-CRMA committee.

Other manufacturer representatives on the committee are: Arthur B. Biddle, Hussmann Refrigeration, Inc.; A. T. Mickle, Federal Refrigerator Mfg. Co.; Harry N. Corbin, C. V. Hill & Co.; Ray L. Greene, Tyler Refrigeration Corp.; and John S. Twist, Sherer-Gillett Co.

In addition to Hattenbach, distributor representatives include: S. W. Davis, Jr., S. W. Davis, Jr., Inc., Greensboro, N. C., and president of NCRSA; Donald D. Denney, Modern Market Fixtures, Inc., Dayton, Ohio; Milton I. Schwartz, S. & M. Schwartz & Co., New York City; S. G. Taylor, Taylor Refrigerator Co., Des Moines, Iowa; George F. Wiedemer, Cable-Wiedemer, Inc., Rochester, N. Y.; and

Ray H. Winther, Ray Winther Co., San Francisco, Calif.

NUZZO, PETERS ADVANCE AT LEE SHELL CO.

Lee Shell Co., Chicago distributor of store fixtures and refrigeration equipment, announces the promotion of James Nuzzo to the position of sales engineer, and of Charles Peters to succeed Nuzzo as service manager.

Nuzzo has been with Lee Shell for 11 years, starting as an apprentice and becoming successfully service engineer and service manager. In his new post in the sales division, he has several men under his supervision.

Peters, with the company for six years as a service engineer, is now in charge of service, installation and engineering.

FOSTER COMPLETES WING

Foster Refrigerator Corp. announces completion of a 10,000 sq. ft. addition to its factory in Hudson, N.Y.

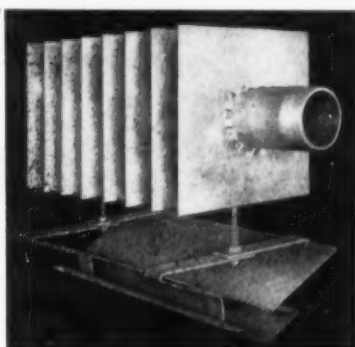
THERMcCOLD CORP. FORMED BY McCALL

William T. McCall, president of McCall Refrigerator Corp., has announced the formation of TherMcCold Corporation. McCall says "the formation of the corporate name was necessary to distinguish the expanding line of TherMcCold Hot 'N Cold food banks from our regular line of commercial reach-in refrigerators and freezers."

MARKET EQUIPMENT FIRM NOW SELLING DIRECT

Termination of the working agreement between Robert Becht Co., producer of engineered equipment for self-service markets, and Friedrich Refrigerators, Inc. has been terminated by mutual agreement, according to an announcement by the Becht organization.

From now on, the announcement explains, the Becht sales force will contact all dealers and supermarket chains directly, working with dealers regardless of the brand of refrigeration equipment they handle.



Prestfin Pipe

Is ideal for cold storages, freezers, food processing and meat packing plants, etc. Manufactured from 2" dia. F. W. steel pipe and 7" square 14-gauge fins, Frick finned pipe gives maximum heat transfer per dollar invested. Each fin is bonded to the pipe under tons of hydraulic pressure. All assemblies are hot-dip galvanized.

These new Frick finned coils require only one-quarter of the space needed for bare pipe having the same surface. See your nearest Frick Branch or Distributor for complete details, or write for Bulletin 158.

DEPENDABLE REFRIGERATION SINCE 1882
FRICK CO.
 WAYNESBORO, PENNA. U. S. A.

Circle No. 40 on Reader Service Card

& AIR CONDITIONING • AUGUST, 1957

Your Sales are the payoff

AUTOMATIC KUBER

AND LA CROSSE GIVES YOU MORE OF EVERYTHING YOUR CUSTOMERS WANT MOST IN COMMERCIAL REFRIGERATION EQUIPMENT

SELF CONTAINED BOTTLE COOLER

DIRECT DRAW

SELF CONTAINED BLUEBIRD

ICE CUBE MAKER 12 TRAY

PRE-COOLER

LA CROSSE

THE LINE THAT'S PROFIT DESIGNED FOR YOU

LA CROSSE COOLER CO.

3002 LOSEY BLVD., SO.
LA CROSSE, WISCONSIN

EXPORT OFFICE:
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NEW YORK CITY
CABLE: EXIMPORT

Circle No. 39 on Reader Service Card

CONTRACTORS

NEWS • ACTIVITIES • PLANS

Test Shows Average \$10.64 Monthly Cost For Home Heating and Air Conditioning

Preliminary figures compiled by Owens-Corning Fiberglas Corp. on 120 of the 172 houses entered in its nationwide test program to determine average heating and air conditioning costs indicate an average cost of \$10.64 monthly.

Called the Low Cost Comfort Program, the study was undertaken to check a statement by Robert Thulman, former engineer of the U.S. Housing and Home Finance Agency, that the average home of 1,000 sq. ft. should be heated and air conditioned all year for an average cost of \$10 a month.

Owens-Corning engineers, under Tyler S. Rogers, the company's technical consultant, based their calculations on 1,200 sq. ft., today's national average. They concluded that the target figure of \$10 might be achieved if the houses were built to conform to "comfort engineering" principles instead of

FHA minimum property requirements.

These "comfort engineering" principles include: use of maximum insulation; adequate attic ventilation; outside shading of sunny windows; and, wherever possible, design of the house so that large glass areas face north and south.

Some 65 utility companies and 160 builders in 81 cities in 29 states are cooperating in the program. The builders submitted their house plans to Owens-Corning's engineers who made suggestions, as necessary, to insure that the plans would conform to "comfort engineering" principles. The utility companies agreed to install sub-meters so that costs of heating and air conditioning could be isolated.

In the study of the first 120 houses, Owens-Corning has also predicted heating and cooling sav-

ings averaging more than 25% for the "comfort engineered" dwelling when compared with those constructed to meet only FHA minimum property requirements.

Several significant conclusions are expected by Owens-Corning as a result of this program.

It believes that through savings realized in heating and cooling costs, air conditioning is now within the financial reach of most American families. It points out that houses built to conform to "comfort engineering" principles will require smaller size heating and air conditioning units and the resultant savings will pay for the cost of the insulation in a few years. It also believes that a house including air conditioning equipment can sell faster and should be more favorably considered for financing by banks, savings and loan associations, insurance companies and others.

Maximum insulation specifications call for 3" of paper enclosed insulation in all outside walls and 3" of foil-enclosed insulation in ceilings. In colder regions, 6" of blowing wool or batts are required in ceilings. In moderate and cold areas, slab and crawl perimeter insulation is specified.

NEW ORDERS UP 18% FOR COMMERCIAL EQUIPMENT

Orders for new commercial and industrial heating, ventilating and air conditioning equipment for the first two months of this year ran 18% ahead of new orders during the same period last year, according to Air Moving and Conditioning Association, national association of the industry's equipment manufacturers.

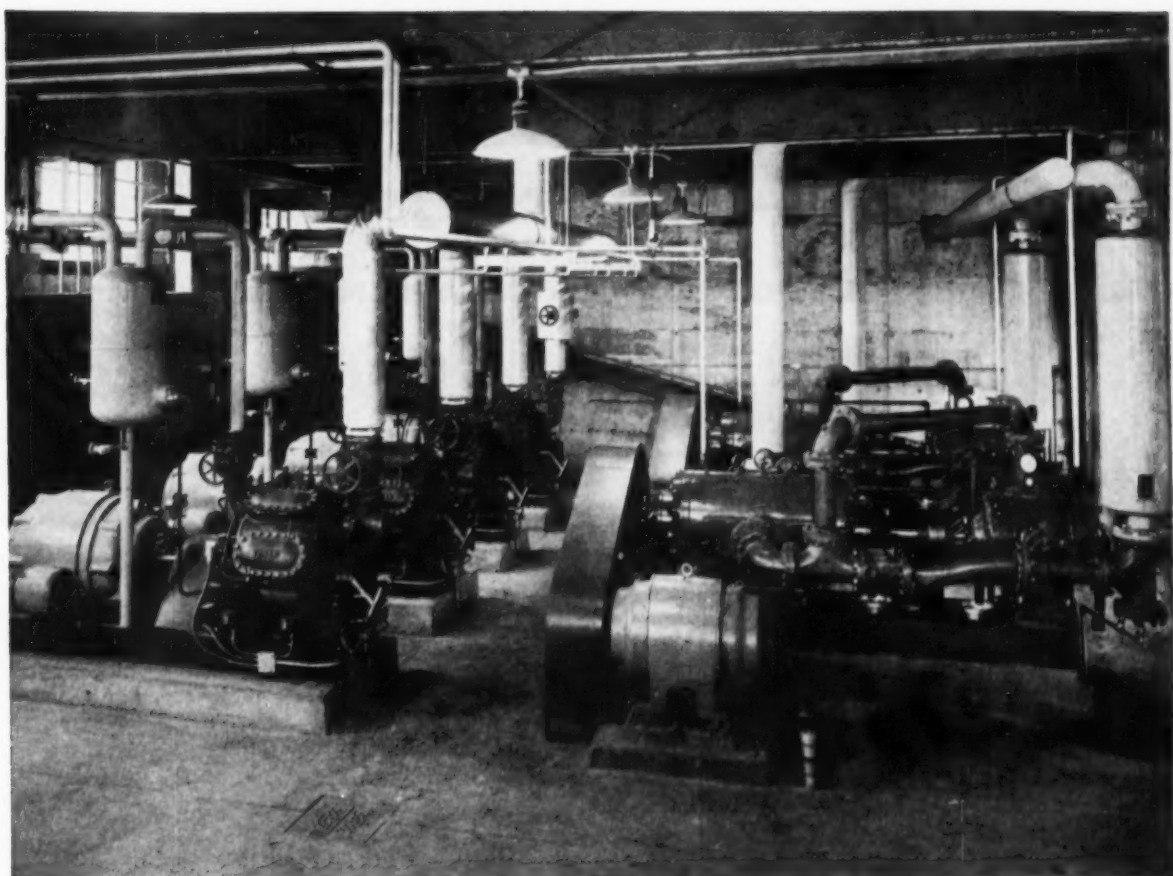
Total shipments for the same period were up 17% over a year ago, the association reports. Leading in sales gains was the centrifugal fan group, which reported 40% more orders during January and February, 1957, than in the same two months a year ago. With shipments dropping behind new orders, this group also reported a net increase in its backlog of unfilled orders.

Second largest gain was reported to AMCA by producers of cen-

GUIDE GOVERNMENT'S AIR CONDITIONING THINKING



IN ATTENDANCE at an air conditioning industry advisory meeting in the Washington office of Federal Housing Commissioner Norman P. Mason recently: Richard G. Hughes, past president, National Association of Home Builders; Frank J. Nunlist, Mueller Climatal Div., Worthington Corp.; Commissioner Mason; Harry H. Ward, Frigidaire Div., General Motors Corp.; Ralph A. Gonzalez, Airtemp Div., Chrysler Corp.; G. R. Munger, Owens-Corning Fiberglas Corp.; Thomas W. McNeill, Air Conditioning Div., American-Standard Sanitary Corp.; Ned A. Cole, Austin, Tex., homebuilder; Kenneth Behr, Lennox Industries, Inc.; Lee Nutter, Home Heating and Cooling Div., General Electric Co.; William A. Lake, Carrier Corp.; Don P. Petrone, Typhoon Air Conditioning Co., Inc.; and Geo. S. Jones Jr., managing director, Air-Conditioning and Refrigeration Institute (extreme right).



Texaco-lubricated compressors flash-cool lettuce

This battery of V-type ammonia compressors is used to flash-cool California lettuce before shipment. Says the manager of this plant (name on request):

"Fresh lettuce, boxed in the field, is trucked directly to our plant. We flash-cool it down to 33°F. in just 18 minutes. Then the refrigerator car keeps it cool and fresh—no need for extra icing of the crates. Naturally, our plant compressors must run at highest efficiency and Texaco Capella Oil Waxfree assures us the clean, dependable operation we must have."

Texaco Capella Oil Waxfree is the lubricant formulated especially for refrigerating compressors: it won't

wax out in the system even at 100° below zero; it has exceptionally low haze and floc temperatures, extra stability and resistance to oxidation. It is moisture free, won't foam and is compatible with all refrigerants.

There is a complete line of *Texaco Capella Oils Waxfree*—all shipped in refinery-sealed containers to protect purity and quality.

A Texaco Lubrication Engineer will help you choose the one best suited to your operation. Just call the nearest of more than 2,000 Texaco Distributing Plants in the 48 States, or write The Texas Company, 135 East 42nd Street, New York 17, N. Y.



TEXACO Capella Oils Waxfree

FOR ALL REFRIGERATING AND AIR CONDITIONING COMPRESSORS

Tecumseh

engineering

VISION

DEVELOPS THE BIG LINE

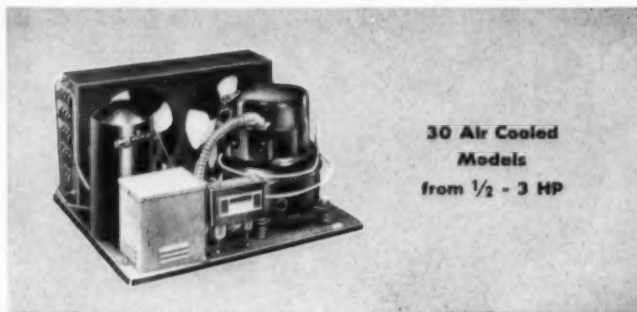
OF COMPRESSORS FOR COMMERCIAL APPLICATIONS . . .

47 models in the 1/2 - 3 HP range

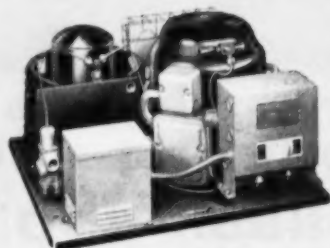
By extending the commercial application range of the economical Tecumseh hermetic compressors we are now able to offer our customers in this field the same basic advantages enjoyed by other Tecumseh customers. This includes low initial cost through efficient mass production, less weight and therefore lower shipping expense, low maintenance costs by quality construction, and fast field replacement through a well organized wholesaler program. With 57 Air-cooled models available from 1/9 — 3HP, 30 of them in the most popular commercial range of 1/2 — 3 HP, Tecumseh offers the most comprehensive line in the industry.

The Tecumseh water cooled line of commercial hermetic units has been effectively increased to include 12 models from 1/2 to 3 H.P. High or medium back pressure applications are available in all models. Plans are under way to include a complete range of low back pressure models. The Air-Water cooled line now includes 5 models in the 3/4 to 3 HP range. Where peak loads are present, and additional condenser capacity is required for short periods, these units offer the most economical answer.

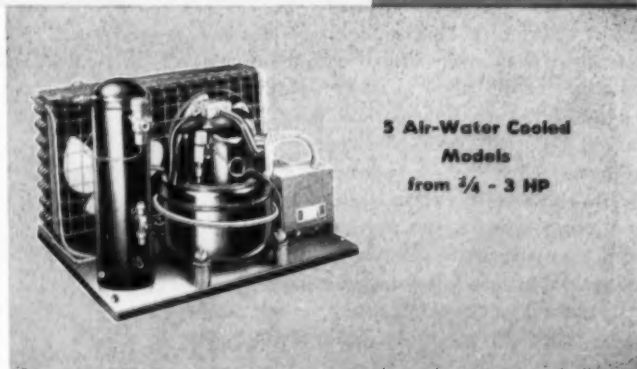
Your Tecumseh wholesaler will stock and sell this equipment. See him today!



**30 Air Cooled
Models
from 1/2 - 3 HP**



**12 Water Cooled
Models
from 1/2 - 3 HP**



**5 Air-Water Cooled
Models
from 3/4 - 3 HP**



The Leader Serving Leaders in the Air Conditioning and Refrigeration Industries

TECUMSEH PRODUCTS COMPANY

MARION, OHIO

TECUMSEH, MICHIGAN

EXPORT DEPT: P. O. Box 2280, 24530 Michigan Ave., W. Dearborn, Michigan

tral station air conditioning units. This group reported both sales and shipments as over 25% ahead of the same period in 1956.

Power roof ventilator producers reported a slight increase in both shipments and orders over 1956.

OFFERS CENTRAL VACUUM CLEANING SYSTEM

A central vacuum cleaning system which taps the duct installation skills of heating dealers and wholesalers has been developed by Sequoia Vacuum Systems, subsidiary of Sequoia Mfg. Co.

Many institutions have used the cleaning duct principle for years, but the firm's design and development group saw residential possibilities, and through savings inherent in mass market production, it brought the cost down to homeowner acceptance, according to David Lindsey, vice president.

In central vacuum cleaning, the housewife slides a 21' vinyl plastic hose into a wall or floor inlet. A tank-type receptacle, usually located in the garage, connects to the various inlets (one inlet serves approximately 500 sq.ft.) Dirt, dust, and pollen are sucked completely out of the house. According to Sequoia engineers, this cleaning action obsoletes the conventional vacuum cleaner, whose exhaust tends to continue dust circulation instead of removing it.

The built-in unit also offers one-stroke cleaning action, lightness of cleaning hose, elimination of heavy machine, flat nozzle with exclusive hinge action to stay flat on floor, no nozzle tilt-up to lose suction, clearance under low furniture, and avoidance of operating noises.

Recommended for 3,000 sq.ft. and over, it has a 1¼-hp motor (1060 watts, 115 volts), operating from 110 ac/dc. Motor fans are heavy-duty, multi-stage turbine, and 120 cfm. Suction loss per 100 feet is only 2%. Dirt receptacle has a 15-gal. maximum capacity.

Exclusive bag keeps suction up to full capacity; it resists soot, alkalies, rot and mildew, and is fire resistant. No venting of exhaust is necessary. The duct system comprises 2" aluminum piping, in 12' extruded lengths.

RACCA, UA MOVING TO ACCORD IN PA.

At a recent United Association state convention, the state of Pennsylvania was divided into three areas that a division of refrigeration and air conditioning mechanics may be established in each of these three areas.

A meeting of 17 local unions was conducted in northeastern Pennsylvania on May 8, and a committee of four was selected from this group to negotiate a refrigeration and air conditioning

agreement for the northeastern area.

The contractors association of that area, affiliated with RACCA national, has appointed four of its members to the negotiating committee.

SUPPLIER CHANGES NAME

Orlando Refrigeration Supply, Inc., Orlando, Fla., has changed its firm name to Baker's Inc., of Orlando. H. F. Baker is president.



Save time...

YOUR BONNEY JOBBER CAN SUPPLY YOUR EVERY NEED FOR REFRIGERATION TOOLS

Refrigeration service men and mechanics everywhere can put their trust in Bonney... a complete line of refrigeration tools designed with a particular job in mind. See your Bonney jobber today!

*If the tool fits the job
... it's a Bonney tool!*



**BONNEY FORGE & TOOL WORKS
ALLIANCE • OHIO**



with the

LOW NET SUCTION HEAD POSITIVE CHARACTERISTICS

AURORA

CLOSE-COUPLED TYPE B CENTRIFUGAL GENERAL PURPOSE PUMPS

Modern industry is confronted more and more with critical suction conditions arising from hot water and chemical handling. These extremely high efficiency, compact, flexible and low NPSH pumps are a welcome answer. You'll be glad to get the facts.



**TYPE BJF
FLANGE MOUNTED**

IDEAL for THESE DUTIES

**AIR CONDITIONING
REFRIGERATION
COOLANT
HOT WATER
CHEMICAL*
GENERAL PURPOSE**

*MAY BE FURNISHED IN SPECIAL ALLOYS TO MEET SPECIFIC CONDITIONS

MANY VALUE FEATURES

SEAL or GLANDS—Available in either as desired.
SPEEDS—3,500, 1,750 (60 cycle) and 2,880, 1,440 (50 cycle) speeds.
CURRENT—AC or DC—All voltages and phases.
MOTORS—1/4 to 7 1/2 H.P. drip-proof, splash-proof, totally enclosed, explosion-proof and chemical. Quiet, efficient NEMA standard.
COMPACT—QUIET—ECONOMICAL.
ALSO AVAILABLE—in Type BJF Pedestal Mounted.



TYPE BJH HORIZONTAL

CONSULT WITH US

Aurora engineers will appreciate specifications of your difficult jobs. Only the RIGHT pump does the job RIGHT.

**Your Inquiries Will Receive Prompt Attention
DISTRIBUTORS IN PRINCIPAL CITIES**

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21 LOUCKS STREET • AURORA • ILLINOIS
EXPORT DEPARTMENT — Aurora, Illinois — Cable Address "NYABINT"



**TYPE BJV
BASE MOUNTED**

PUMPS

"by Aurora"
**for EVERY NEED
in INDUSTRY**
WATER SUPPLY
CONDENSATE
BOILER FEED
PROCESSING
BOOSTER
TRANSFER
ETC., ETC.,
Ask for CATALOG "M"

WRITE
FOR
BULLETIN
119J

Circle No. 43 on Reader Service Card

useful
**BULLETINS
BOOKLETS
CATALOGS**

NEARLY 70 CHEMICALS are described in 12-page products catalog from American Potash & Chemical Corp., Los Angeles, Calif. Properties and applications of these chemicals are given. Information also is supplied on the firm's research and development program.

Circle No. 120 on Reader Service Card

IMPORTANCE OF MAINTAINING a constant voltage to obtain the maximum performance from electric powered or electric driven equipment is outlined in a new catalog (VA 312) published by Acme Electric Corp., Cuba, N. Y. The catalog also briefly covers the problem of voltage drop and voltage fluctuation as a result of overloads on distribution systems. Specifications and dimensions are given on all of the Variable Voltage Adjusters available from the company.

Circle No. 121 on Reader Service Card

MOISTURE BUILD-UP in pneumatic-operated instrumentation is detected by a new dew-point monitor system developed by American Instrument Co., Silver Spring, Md. and described in Bulletin 2273. The system detects unfavorable moisture build-up when it approaches the danger limit, and then actuates an alarm. The monitor system is comprised of two devices: The Aminco Humistat, a precise humidity controller; and a plug-in type electric Hygrometer Sensing Element which senses moisture content changes and relays these changes to the Humistat. The device may be set to actuate an alarm for dew-point temperatures as low as -45 F at 50 psi and -60 F at 150 psi. The equipment may be safely used in pressures systems up to 100 psi.

Circle No. 122 on Reader Service Card

MEAT-INDUSTRY equipment and supplies is digested in General Catalog 88, supplement to Catalog 88, available from Koch Supplies, Kansas City, Mo. Each product is analyzed, priced, and shipping weights are included. Two-color booklet is fully illustrated.

Circle No. 123 on Reader Service Card

"THE MOVING FORCE OF INDUSTRY" describes complete line of a.c. and d.c. motors, gearmotors, motor generator sets, motor controls and complete packaged mechanical and electronic adjustable-speed drives manufactured by Reliance Electric & Engineering Co. and Reeves Pulley Div., Cleveland. Designated Bulletin A-2501, it includes photos and captions of various products.

Circle No. 124 on Reader Service Card

OPERATION AND MAINTENANCE of rotary booster compressors in refrigeration plants is depicted in eight-page article available from Freezing Equipment Sales, Inc., York, Pa. Functions of essential elements are described in the text, along with detailed steps for periodic inspection, overhaul, and reassembly. Illustrations include four sectional views of a rotary compressor showing parts in detail. Title of article is "Prevention of Refrigeration Plant Failures".

Circle No. 125 on Reader Service Card

STATISTICAL DATA on its motor compressor and condensing units is cataloged in Bulletin G-148 by Brunner Co., Gainesville, Ga. Model numbers, horsepower, shipping weights, and other useful information is included.

Circle No. 126 on Reader Service Card

CERTIFICATION METHODS are described in Catalog No. 511, (Acme Industries, Inc., Jackson, Mich.), on its series of six, "Flow-Cold", packaged liquid chillers. Simplified and time-saving selection table is included.

Circle No. 127 on Reader Service Card

SODA FOUNTAINS and equipment are cataloged in 16-page publication (Price List No. 9) produced by S & R Soda Fountain Mfg. Co., Inc., New York. Photos on every page cover complete line of food service units. Included are prices of standard models and prices of many alternate sizes.

Circle No. 128 on Reader Service Card

ACOUSTICAL AND THERMAL values of three kinds of flame-blown glass fiber are illustrated with charts in new product brochure by L.O.F. Glass Fibers Co., Toledo, Ohio. Application techniques are viewed in detail.

Circle No. 129 on Reader Service Card

ENVIRONMENTAL TEMPERATURE cabinets are examined in four-page brochure released by Webber Corp., Indianapolis, Ind. Standard top opening specifications are listed. Pointed out are units' standard and optional features.

Circle No. 130 on Reader Service Card

(See page 80 for Air Conditioning Literature)

IMPORTANT NOTICE

**Pinnacle
has them
in stock**

12' and 15' 3"
DOUBLE DUTY
**MEAT
CASES**
34" deep 50" high

- QUALITY CONSTRUCTION THROUGHOUT!
- GLEAMING WHITE LIFETIME PORCELAIN!

Pinnacle will build to order

12' and 15' 3" wide cases—with the same height of 50", but with a depth of 40".

Write today for full information!

Pinnacle
EQUIPMENT CORPORATION
FLEETWOOD, PENNSYLVANIA

EXPORT DEPT.—39 Broadway, New York

Circle No. 45 on Reader Service Card

& AIR CONDITIONING • AUGUST, 1957



Plastic Coating Stops Costly Condensation Drip and Rust

THE COSTLY PROBLEM caused by dripping from this sweating pipe was permanently solved with one easy and inexpensive application of NoDrip Plastic Coating. Sweating pipes, ceilings, air ducts and other metal equipment are also completely protected against rust and corrosion by low cost NoDrip.

NoDrip Plastic Coating acts immediately to insulate and protect. One application adds many years of service life to metal equipment. NoDrip is also resistant to acid, alkali and brine...protects concrete, brick, plaster, tile wood or composition surfaces.

Easy application requires no special equipment or skill. Anyone can apply NoDrip with brush, trowel or spray. Stop your condensation problem now! Get full details without delay.

**JW Mortell
COMPANY**



FREE

32-PAGE NoDrip DATA HANDBOOK

Complete with photographs, charts and technical information to solve your condensation problem. Write today.

Available at leading refrigeration supply houses

J. W. MORTELL Co., 553 Burch St., Kankakee, Ill.

Please send my FREE copy of the NoDrip Data Handbook.

Name _____

Company _____ Title _____

City _____ Zone _____ State _____

Circle No. 44 on Reader Service Card

NEW PRODUCTS

For further information on any of these products, simply circle on the postcard provided in this issue the key numbers of the items in which you are interested. Your request will be forwarded directly to the companies concerned.

(For Air Conditioning Products turn to page 82)

Extra Big Dolly

Product: Extra, big, ½-ton capacity dolly for easier handling of heating and cooling units and upright freezer.



Manufacturer: Yeats Appliance Dolly Sales Co., Milwaukee, Wis.

Features: Aluminum alloy frame, caterpillar step glides and strap ratchet. Equipped with two straps and ratchets and four wheels, enabling operator to roll heavy equipment on horizontal rather than balance them vertically.

Circle No. 154 on Reader Service Card

Condensing Unit

Product: Expanded line of hermetically-sealed condensing units in sizes up to two hp. Ten larger sealed units added, in sizes from ¾ to 2 hp.

Manufacturer: Kelvinator Div., American Motors Corp., Detroit, Mich.

Features: Available in both air and water cooled. Line now includes 25 models.

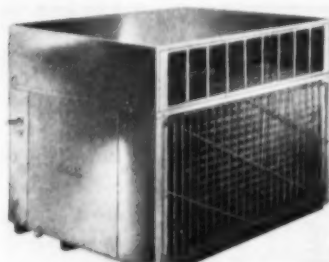
Circle No. 155 on Reader Service Card

Remote Condensing Unit

Product: Air-cooled remote condensing unit (HSA3-400) designed specifically for jobs requiring four tons of cooling.

Manufacturer: Lennox Industries, Inc., Marshalltown, Iowa.

Features: Serviceable compressor created especially for this unit. With 95-degree air over condenser, Btuh capacities are 48,000 or 41,700 depending upon size of evaporator. When special discharge hood is added, condenser air is discharged on same side of unit as air intake. Discharged air is deflected upward so



as not to recirculate through condenser coil. Single-side intake-discharge arrangement permits great flexibility of installation. Can even be built into building, such as garage, with only one side exposed to outdoors. Acoustically-lined discharge hood.

Circle No. 156 on Reader Service Card

Motor Base

Product: "Adjusto-Slide" motor base.

Manufacturer: American Pulley Co., Philadelphia, Pa.

Features: Belt take-up accomplished by adjusting only one screw, an adjustment safely made without stopping motor. For belt replacement, adjusting screw can be loosened and swung aside, freeing top plate and motor to move far enough for removing old and installing new belt. When new belt is in place, motor is moved back in place, adjusting screw swung back, tightened and machine is back in operation. Die-formed top and bottom members slide freely, yet always maintain perfect belt alignment, manufacturer says. Motor base sizes and

mounting hole spacing accommodate NEMA frame sizes from 182 through 326V in both old and new designations, from 1 to 30 hp. Motor need

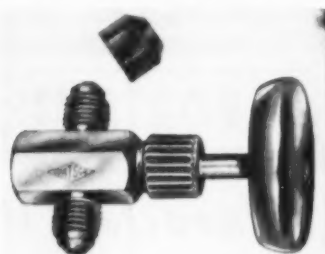


never be loosened from top plate, except for motor replacement. Can be mounted vertically, horizontally, or in inclined position.

Circle No. 157 on Reader Service Card

Two-Way Control Valve

Product: Addition to group of line tap valves, two-way control valve — Part No. CV-2; differs from CV-1 unit in that there are two ¼" male fittings instead of one.



Manufacturer: Watco, Inc., Hialeah, Fla.

Features: Product will not replace CV-1, but is used in conjunction with it. Double fittings permit connection of gauge and charging line to one or any number of refrigerant containers, thus eliminating need for charging manifold. Reduces possibility of introducing moisture into system when more than one container or refrigerant is required, manufacturer says. CV-2 model furnished with sealing cap to be used when it is not necessary for both ports to be open at same time.

Circle No. 158 on Reader Service Card

Strip Coating

Product: New type of strip coating called "Strip-Kote."

Manufacturer: Chemical Consulting Service, Milwaukee, Wis.

FOR PEAK ALL-SEASON PERFORMANCE

LARKIN ZEPHYRCON

AIR COOLED CONDENSER

5 Belt-driven Models—5 to 20 Tons

5 Direct-drive Models—2 to 10 Tons

Now the famous Larkin Zephyrcon is available in two series: Direct drive FC models for economy and minimum maintenance, and belt driven BFC models for the lowest possible noise level.

FC models are available in 2, 3, 5, 8 and 10-ton capacities. BFC models come in 5, 8, 10, 16 and 20-ton capacities. All are engineered for parallel use to accommodate refrigeration or air conditioning systems of virtually any capacity. Multiple circuits are available for all models at no extra cost.

PEAK PERFORMANCE YEAR 'ROUND

When used with the Larkin Posi-Trol control system, which maintains head pressures in low ambient temperatures, the Larkin Zephyrcon functions at peak performance the year 'round.

Check the features, check the performance data, and make the wise choice in air-cooled condensers—Larkin Zephyrcon. Call your wholesaler or write to us today.

OUTSTANDING FEATURES

- Patented Larkin cross-fin coil—aluminum fins and staggered copper tubes
- For use indoors or outdoors
- A single large fan on BFC model assures low operating noise level
- Motor on BFC model is standard NEMA design mounted on adjustable base
- Slow speed motor on FC model is permanently lubricated, has overload protection, and is mounted on resilient base
- Casing is of heavy-gauge steel
- Unit finished with baked-on epon-base primer and melamine top coat for maximum protection
- Motor is enclosed in casing, protected from the weather
- Discharge shield available
- Fan guard is standard equipment

BASIC RATINGS

FC SERIES—DIRECT DRIVE

Model No.	Capacity at Evaporator BTU/HR	Tons	cfm
FC-2	27,700	2.30	2500
FC-3	37,350	3.21	3500
FC-5	62,500	5.21	5500
FC-8	95,600	7.96	7500
FC-10	124,000	10.3	9100

BFC SERIES—BELT DRIVEN

Model No.	Capacity at Evaporator BTU/HR	Tons	cfm
BFC-5	62,500	5.21	5500
BFC-8	95,600	7.96	7500
BFC-10	124,000	10.3	9100
BFC-16	191,200	15.92	15000
BFC-20	248,000	20.6	18200



LARKIN COILS INC.

519 MEMORIAL DRIVE, S.E., ATLANTA, GEORGIA

This advertisement appears in *Air Conditioning & Refrigeration News*, *Commercial Refrigeration & Air Conditioning* and *Refrigerating Engineering*.

LT-63

Features: Milky colored, plastic emulsion which when dry gives transparent, tough film for protecting smooth and wrinkled metal surfaces. Applied by brush or spray gun. Contains no inflammable solvents. Solid content—film forming portion—is 52%. Coverage will vary according to thickness of film deposited. For example, coverage is 500 sq.ft. per gal. for .004" film. Greater coverage is attained when thinner film is deposited.

Circle No. 159 on Reader Service Card

**BUY FROM YOUR
REFRIGERATION WHOLESALER**

Mechanical Refrigeration Unit

Product: "Retailer", mechanical refrigeration unit (inside truck view shown) designed specifically for door-to-door retail mail trucks.

Manufacturer: Union Asbestos & Rubber Co., Coldmobile Div., Chicago, Ill.

Features: Compact 3/4-hp, self-contained package. Hermetically-sealed system, including evaporator, condenser, and compressor. Occupies less space within truck than normally would be taken by two cases of milk. Provides complete around-the-clock protection. Power is supplied by a.c. generator mounted under hood that operates when truck

is running. Variable speed control increases generator's output as motor speed decreases, thus giving constant flow of power to unit. Current is approximately the same when truck is moving at 25-30 mph, as it is when motor is idling. Driver plugs in single-phase, 220-volt outlet to



keep unit operating while at dock-side or in garage. Mounted in small opening cut in either rear or side panel of body. Installed easily. Thermostat maintains constant predetermined temperature inside body of truck.

Circle No. 160 on Reader Service Card

LEHIGH **BLU-COLD** CONDENSING UNITS

lead in

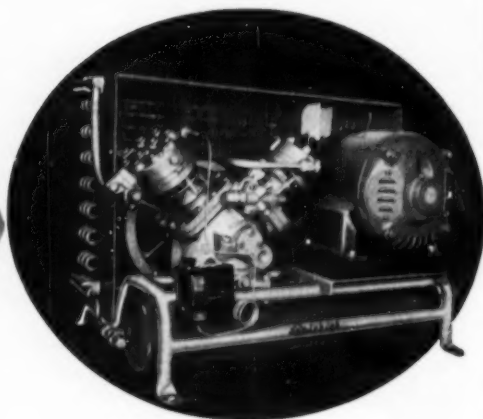
ADAPT-ability

DEPEND-ability

FLEX-ability

SERVICE-ability

—and their unique tubular air-frame base adds complete ACCESS-ability!



where "ability" counts,
specify Lehigh



Lehigh MANUFACTURING CO.

DIVISION OF LEHIGH, INC. • Plant: Lancaster, Pa.
Export Dept.: 13 East 40th Street, New York, New York

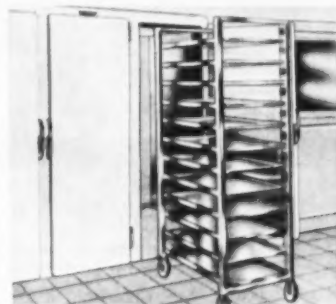
write now . . . for important informative catalog

Circle No. 47 on Reader Service Card

Food Serving Cart

Product: Wheel-in application added to food banks.

Manufacturer: TherMcCold Corp., Hudson, N. Y.



Features: New advancement in storage of food on trays to speed up food service in mass feeding establishments. Carts loaded with trays of food can be filled at work area and wheeled into wall-type sectional "Hot 'N Cold" food banks and can be wheeled out during peak rush hours, or as needed. This application eliminates unnecessary hand handling of trays.

Circle No. 161 on Reader Service Card

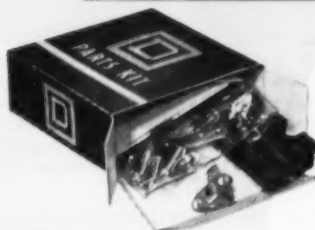
Commercial Heating Blanket

Product: "Us-Kon" Type O, odorless, commercial electric heating blanket for defrosting refrigera-

Qwik

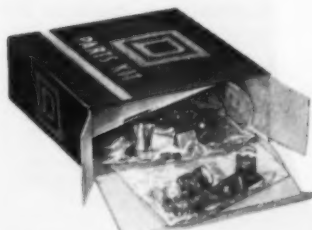
Change

with **PACKAGED** MOTOR STARTER PARTS!



INTERLOCKS

A wide variety of quick-change, front-mounted interlocks adds flexibility for special applications



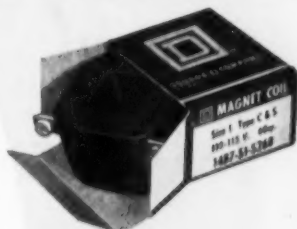
CONTACTS

Packaged replacement contacts are easily installed without disturbing wiring



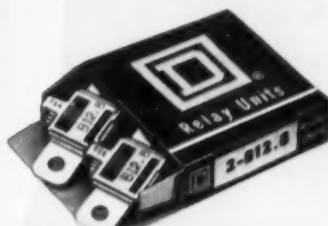
PUSH BUTTONS AND SELECTOR SWITCH

These Kits contain all parts necessary to make quick changes from standard starters to either push button or selector switch controlled devices



COILS

Screwdriver is only tool required for quick change of magnet coil to accommodate different voltages



O.L. RELAYS

A wide variety of easily selected, packaged overload relay heater units provides quick changes to meet varying requirements for overload protection

EASY to Identify!
EASY to Buy!
FASTER to Install!



NOW...EC&M PRODUCTS ARE A PART OF THE SQUARE D LINE!

SQUARE D COMPANY

tion coils, melting drop ice, and for evaporating moisture in pastry and baked goods storage cabinets where contents of cabinet are inclined to pickup and absorb odors from air.

Manufacturer: United States Rubber Co., New York, N.Y.

Features: Contains no heating wires. Employs conductive rubber heating element which spreads heat uniformly over entire area. Extremely efficient in conversion of electricity to Btu's, manufacturer says. May be bent around radius as small as $\frac{1}{4}$ ", fastened down with bolts, screws or nails around periphery or cemented down in spots or over entire surface. Circle No. 162 on Reader Service Card

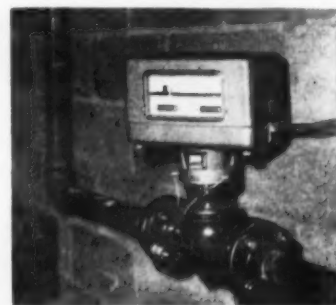
Mechanical Btu Meter

Product: Mechanical Btu meter (Pollux Btu Integrating Meter) that measures heat in thermal units and liquid-flow in gallons.

Manufacturer: Air Conditioning Equipment Corp., New York, N. Y.

Features: Measures heat absorbed by liquid and heat removed from liquid, and heating and cooling consumed in individual areas. Can be used in metering of central heating and refrigeration plants. Applicable for measuring quantity of heating and cooling consumed in individual areas. Consists of liquid meter and integrator. Liquid meter

measures flow of liquid. Integrator combines difference between supply and return liquid temperatures and flow through liquid meter giving resultant product in Btu's automatically totaled on counter. Directly above these two counters is pointer



indicating instantaneous temperature difference of supply and return liquid in degrees Fahrenheit. Corrosion proof, easily installed, and requires no lubrication. Can be provided with remote counter.

Circle No. 163 on Reader Service Card

Now! GREATER FLEXIBILITY with the **WATSCO** TWO-WAY CONTROL VALVE

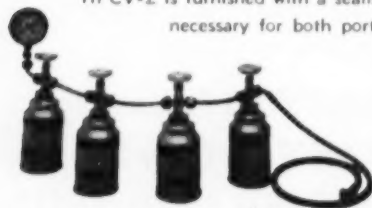
GREATER FLEXIBILITY FOR CHARGING, DISCHARGING, AND TESTING THROUGH WATSCO'S CAN TAP, LINE PORT AND LINE TAP, VALVES.



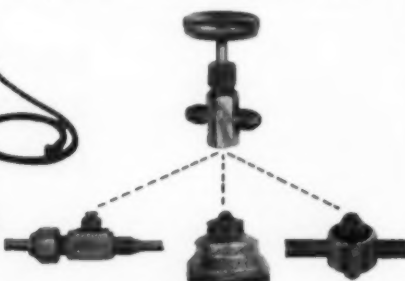
Part No. CV-2

The double fittings enable you to connect a gauge and a charging line, in series, to one or any number of Charg-A-Can refrigerant containers at the same time. This eliminates the need for a charging manifold. The CV-2 Two-Way Valve also reduces the possibility of introducing moisture into the system when more than one can of refrigerant is required.

Th CV-2 is furnished with a sealing cap to be used when it is not necessary for both ports to be open at the same time.



As with the CV-1, the CV-2 Two-Way Control Valve is designed to fit all Watsco Line Tap, Can Tap, and Line Port Valves.



WATSCO LINE TAP VALVES ARE RIGHT FOR EVERY JOB!

WATSCO INC. Send for 1957 Catalog
1020 EAST 15th STREET, HIALEAH, FLORIDA.

Circle No. 49 on Reader Service Card

Impeller Pump

Product: Neoprene impeller pump.

Manufacturer: American Machine Products, Inc., New York, N.Y.



Features: Self-priming and operates in either direction at low or high speeds, manufacturer says. Said to be first such unit in $\frac{1}{2}$ " ips designed to operate off motor as small as 1/3-hp single phase. Made of Naval Bronze throughout. Stainless steel shaft. Handles all liquids that do not affect bronze or neoprene, at $7\frac{1}{2}$ gpm, 10 psi at 1750 rpm. Only moving part is impeller. Ideal for general transfer of liquids at low pressure.

Circle No. 164 on Reader Service Card

Chilling Machine

Product: Compact chilling machine (Model U-70-6) for testing stability of electric wire insulation.

Manufacturer: Cincinnati Sub-Zero Products, Cincinnati, Ohio.

Features: Include air circulator

Modern cure for defrost blues!

NEW!

Paragon

5100 series makes commercial defrost systems 100% automatic

PARAGON engineering scores again! Helps you modernize customers' refrigerating systems with a low-cost, simple changeover that cures haphazard defrosting for all time!

New 5100's time control initiates the defrost cycle, and a small built-in solenoid (when energized by a remote thermostat or pressure switch) terminates the cycle. There's more—an adjustable mechanical fail-safe overrides the solenoid so defrost cycle can be terminated at 45-minute multiples—regardless of solenoid action.

YOU PROFIT by eliminating a minimum of two service calls per year. With the 5100 on the job, seasonal temperature adjustments common to most systems are totally eliminated.

YOUR CUSTOMERS PROFIT because new 5100 fail-safe feature eliminates danger of food spoilage. Equipment *cannot* remain on "off" cycle after normal defrost period is over.

A snap to install!

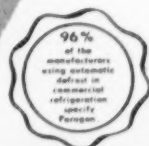
Installation diagrams and complete operating data furnished in each carton. Unit has 24-hr. dial; 1 to 8 defrosts per day. New 5100 is powered by a long-life Telechron 4-watt heavy-duty motor—a quality product throughout.



5100 series special design takes advantage of existing thermostat in electric heat systems

Easy hook-up eliminates buying extra thermostat. Simplifies your installation, saves customer's extra expenditure.

Order the new
5100 series
from your
distributor --
or write:
Dept. 1688



PARAGON

Also write for complete facts on these famous Paragon timers.



Commercial Refrigeration



Dehumidifier



7 Day Calendar



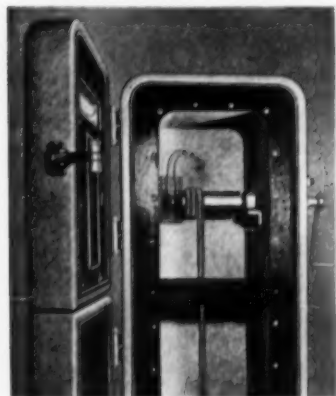
Fan

ELECTRIC COMPANY

Two Rivers, Wisconsin

WORLD'S FOREMOST MANUFACTURER
OF TOP-QUALITY TIME CONTROLS

in door, observation window and lights, as well as fittings for holding manually-rotated mandrel shaft which supports weighted lengths. Temperature adjustment from -10 to -80 F. Thermal capacity of 200 Btuh at -70 F, operating under normal ambient conditions. Steel, one-piece cabinet with 10-gauge steel



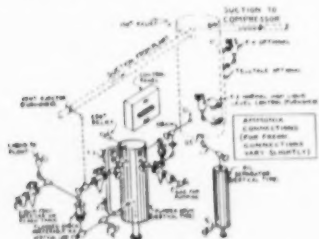
base. Machine-tool gray. Outside dimensions: height, 84"; width, 20"; depth, 42". Inlet and outlet ducts enter directly into chamber area. External switch on motor. Combination air-water-cooled condensing unit utilizes $\frac{3}{4}$ -hp accessible hermetic motor-compressors. 6" dial indicating thermometer. Operates on 230 volts, 60 cycle, single-phase.

Circle No. 165 on Reader Service Card

Refrigerant Piping System

Product: Refrigerant pumping recirculator system for plant having existing suction accumulator tank in suction line ahead of refrigeration compressors.

Manufacturer: J. E. Watkins Co., Maywood, Ill.



Features: Provides advantages of liquid recirculation since system is equivalent to "Liquid Recirculator", also manufactured by company. For any tonnage and any refrigerant, system drains liquid from existing suction accumulator tank into "pumper" tank. When tank is full, system automatically introduces refrigerant gas (at liquid feed pressure) into pumper. Simultaneously, main liquid supply valve is closed

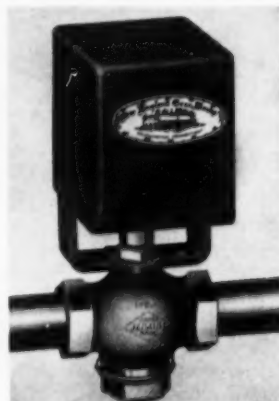
off and liquid from pumper feeds plant. Low level control on pumper switches system back to draining by closing off high pressure gas to pumper, opening main liquid feed valve, and opening vent line valve. Control is provided which automatically closes main liquid supply if excessive liquid level builds up in accumulator. Horizontal systems are provided when plant accumulators are close to floor level. Oil separator is included. In Freon systems, separated oil is returned automatically to compressors.

Circle No. 166 on Reader Service Card

Motorized Valve

Product: Motorized valve which incorporates all desirable features of automatic valve operation in one unit.

Manufacturer: New England Gear Works, Southington, Conn.



Features: Available in 10 sizes; $\frac{1}{4}$ to 3". Jenkins bronze globe body. Three voltages: 24, 115, and 230. Three timing cycles: 8, 32, and 139 seconds. Easily adaptable to heating and air conditioning applications. Automatic disc compensation. Extremely tight shut-off, 150 lbs. pressure capacities on most sizes. No mounting restrictions. Permanent lubrication. Quiet, positive operation without linkage, manufacturer says. Machine-cut, hardened, steel gears. Only eight moving parts. Compact size (operator measures $3\frac{3}{8}$ x $3\frac{3}{8}$ " and remains constant on all 10 sizes—entire unit small enough to fit between 16" floor joists). Can be controlled by any positive action, single-pole, double-throw switch. Will not bind or stick, manufacturer says. Circle No. 167 on Reader Service Card

Waitress Service Section

Product: Waitress service section designed to speed customer service at peak meal periods.

Manufacturer: Dunhill Food Equipment Corp., Brooklyn, N. Y.

Features: Measures 72" high; 60" long; and 24" deep. Made of welded steel. Points of wear are reinforced for extra rigidity. All visible areas are surfaced in easy-to-clean stainless steel. Water station with push-type water arm and nonsplash under grid. Two spacious bread drawers and four-hole cutlery bin. Three



shelves for glassware. Large ice bin. Built-in butter dish. Full size pastry display case. Sliding glass doors and mirrored back panel. Available ice cooled or mechanically cooled with either self-contained, hermetically-sealed, or remote refrigerator unit.

Circle No. 168 on Reader Service Card

Electric Tailgate

Product: "Jiffy-Lift", electrically-powered tailgate.

Manufacturer: Mid West Body & Mfg. Co., Paris, Ill.

Features: Touch of button lifts up to 600 lbs. in just 15 seconds. One man can load and unload trucks quickly without heavy lifting. Geared to eliminate battery drag. Motor is



reversible. Built-in motor brake prevents coasting. Heavy-duty, push-button control has built-in lock for security. Weighs only 225 lbs. Moving parts run freely on ball bearings. Circle No. 169 on Reader Service Card

Safety Solvent

Product: SS-25 safety solvent recommended for cleaning and degreasing parts and electric motors.

USE THE CARTON

THAT HELPS YOU



There used to be a time when handling rolls of copper water tube and refrigeration tube was an awkward proposition at best. But not any more. Nowadays with—Wolverine Roll-O-Tube®—you can get copper tube in its most easily handled form.

You can obtain tubing in this handy, round carton that can be rolled like a hoop . . . easily carried by its convenient center hole . . . used as a time and work saving reel for quicker, easier installations. Unused tube stays in the carton . . . protected and ready for your next installation.

Next time you visit your wholesaler don't just ask for copper tube. Instead *insist* on Wolverine Roll-O-Tube—get the carton that *helps* you do a better job more easily.



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Circle No. 51 on Reader Service Card

Manufacturer: National Disinfectant Co., Dallas, Tex.

Features: Said to be approximately 25 times safer to use than carbon tetrachloride. Eliminates danger of petroleum solvents since it has no flash at boiling point. Used as replacement for carbon tetrachloride in displacing water in refrigerant systems. Corrosion free. Leaves no residue and is safe for human skin, manufacturer says. Circle No. 170 on Reader Service Card

**BUY FROM YOUR
REFRIGERATION WHOLESALER**

Frozen Food Case

Product: Frozen food display case called "Low Temp".

Manufacturer: Bally Case & Cooler Co., Bally, Pa.

Features: Offers largest amount of display space for lowest cost, manufacturer says. Principle of automatic defrost air dryer system captures moisture from all air above product on display and reduces frost formation on inside walls of case. Without this frost formation, defrosting by introducing heat no longer is required. Packages always are brick-hard and frost-free. Three sizes: 11, 14, and 19 cu.ft. Smallest case uses 1/2-hp unit and two larger



sizes use 3/4-hp. Condensing units are sealed. Condensate is disposed of in built-in evaporator pan. Welded steel frame. Complete with night cover.

Circle No. 171 on Reader Service Card

READY FOR THE TEST?

You're ready for any test if you have these Marsh "Serviceman" instruments. They all share in those commendable Marsh family traits — precision, ruggedness, honest quality, remarkable value. Notice the new models . . . and the new "Serviceman" Timer! Remember:

Your jobber stocks them

Serviceman

TESTING THERMOMETER



Handsome new model of standard, distant-reading testing thermometer. Tests to 40 below. Tube is now made permanently leak tight by Marsh "Conoweld" process. Recalibrator now in back of case for easy access.

Serviceman

TESTING GAUGE SET



Great team of extremely accurate testing gauges in handsome polished brass cases with beveled glass crystals. Rings readily unscrewed for quick access to recalibrator. Note retard scale on compound gauge for close reading in important testing range.

Serviceman

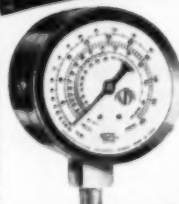
DELUXE 3-SCALE



Like the standard model above, but has two added, color-differentiated scales showing corresponding pressures of Freon 12 and Freon 22. A beautiful instrument; a real time saver.

Serviceman

4-SCALE TESTING GAUGE

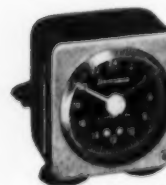


Three extra color-differentiated scales in this accurate testing gauge show temperature corresponding to pressure for sulphur dioxide, methyl chloride and Freon. Ranges for all needs.

Serviceman

TIMER

Useful new arrival in "Serviceman" family shows total running time and total elapsed time of refrigerating unit on 24-hour dial. Easier to use and read than expensive recorder; costs far less. Two models cover all conditions.



MARSH INSTRUMENT CO.

Sales affiliate of Jas. P. Marsh Corporation
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8407 103rd Street, Edmonton, Alberta, Canada

Serviceman

POCKET THERMOMETER



Highly accurate; easy to read; equipped with swivel to hang in refrigerator or clip in your pocket.



Circle No. 52 on Reader Service Card

Leak-Detector Torch

Product: Halide blow torch which detects Freon leaks in refrigerant fittings and joints.

Manufacturer: Kidde Mfg. Co., Bloomfield, N. J.



Features: Lightweight torch is held in one hand while other hand moves opening of rubber tube over piping. Torch will emit brilliant green flame if Freon is present. Torch with rubber tube removed supplies 30 minutes of 3500 F flame for soldering of wires, pipes, and similar jobs. Includes five chargers. Comes in strong metal carrying case. Circle No. 172 on Reader Service Card

Soldering Flux

Product: "Wetol", stable, non-acid flux for soldering copper, brass, steel, and terneplate.



Manufacturer: Farrelloy Co., Philadelphia, Pa.

Features: Fortified with spirits of metal which react on solder to increase fluidity and spread factor. Contains alkaline buffers which increase stability of flux and reduce residual attack. Said to be safer for general soldering. Wetting action makes possible penetration of dirt, oil, and grease so uniform envelope is formed. Withstands wide temperature range without oxidizing and does not fume, manufacturer says. Can be used with either torch or soldering iron. Soluble in water and leaves no sticky or gummy residue.

Circle No. 173 on Reader Service Card

Walk-In Freezer

Product: Line of walk-in freezers of sizes 5'8" x 5'8" to 60 x 20', and larger.

Manufacturer: Elliott-Williams Co., Indianapolis, Ind.



Features: Constructed of small interchangeable panels, it is possible to expand size of this equipment, change its location in the building, and move it to another location at any time at nominal cost. Available in aluminum alloy, stainless steel, and natural anodized aluminum finishes. Overlapping type of super freezer door equipped with electric heater element.

Circle No. 174 on Reader Service Card

Refrigerator Case

Product: Meat and delicatessen refrigerator cases, Model EM-8 and Model ED-8.



Manufacturer: Evans Mfg. Corp., Mount Vernon, N. Y.

Features: Consistent interior temperature is coupled with auto-

matic humidity control to maintain absolute minimum of moisture loss and meat shrinkage. Heavy gauge steel. Finished inside and out in white porcelain trimmed with stainless steel. Full-vision, hermetically-sealed, triple-glass allows customers to view all products in case while at same time guaranteeing against cold loss. Interior temperature maintained by three refrigerator coils. Large, rear doors provide easy access inside. Recessed kick-plates. Fitted with sweat-proof drip pans. Illumination provided by two rows of fluorescent lights, under middle shelf and under case top. Available in 6, 8, and 10' lengths. Meat case

is 50" high and 36" deep—delicatessen case 54 and 36".

Circle No. 175 on Reader Service Card

J. CASSADY SALES MGR.

Jerrell A. Cassady has been appointed sales manager of Barton Distributing Co. Cassady formerly was refrigeration manager for Thermal Co., Inc., St. Paul.

He also spent many years with F. H. Langsenkamp Co., both in its Indianapolis and South Bend offices.

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THREE WAYS BETTER

1. C-D Motor Capacitors start out under the most rigid raw material controls. Passable ingredients are discarded in favor of only the highest purity and quality.
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3. Proven dependability in field service for over 44 years. Year after year C-D continues to serve its many satisfied customers. There are literally millions of C-D Motor Capacitors in use today.

Always insist on C-D Capacitors—there's a right type for every motor made. Your C-D Distributor has it. He's listed in your classified phone book. Dept. CR-126, Cornell-Dubilier Electric Corporation, South Plainfield, New Jersey.



CONSISTENTLY DEPENDABLE CORNELL-DUBILIER CAPACITORS

PLANTS IN SOUTH PLAINFIELD, N. J.; NEW BEDFORD, WORCESTER AND CAMBRIDGE, MASS.; PROVIDENCE AND HOPE VALLEY, R. I.; INDIANAPOLIS, IND.; SANFORD AND FUGUAY SPRINGS, N. C.; SUBSIDIARY, THE RADIANT CORPORATION, CLEVELAND, O.

THERE ARE MORE C-D CAPACITORS IN USE TODAY THAN ANY OTHER MAKE

Circle No. 53 on Reader Service Card

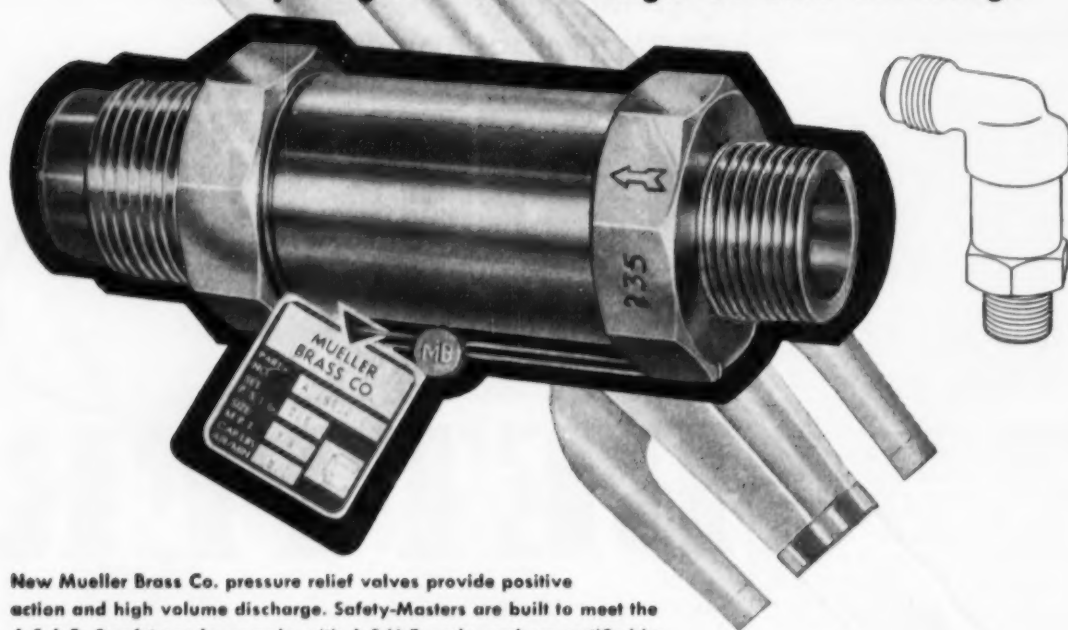
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refrigeration products that are
out of this world!

the new

Safety-master

PRESSURE RELIEF VALVE

safety engineered for high volume discharge



New Mueller Brass Co. pressure relief valves provide positive action and high volume discharge. Safety-Masters are built to meet the A.S.A.B. 9 safety code, comply with A.S.M.E. code, and are certified by the National Board. Safety-Masters are available in pressure settings from 150 lbs. to 450 lbs. Settings are factory-accurate and are stamped on the body of the valve. All valves are safety sealed to guarantee maintenance of setting accuracy. In operation, the unique instant action of the valve seat disc relieves pressure without chatter or vibration, and provides complete and positive reseating. Safety-Masters are available in 12 different end connections in straight-through or angle type, and are all made from premium quality brass for superior strength. Every Mueller Brass Co. pressure relief valve is packed in strong metal edge cartons for complete protection until installation. Be sure to specify Safety-Master . . . another new Mueller Brass Co. product that is "out of this world" in design, engineering, and performance.

**WRITE TODAY for
new product data
sheet No. 11**

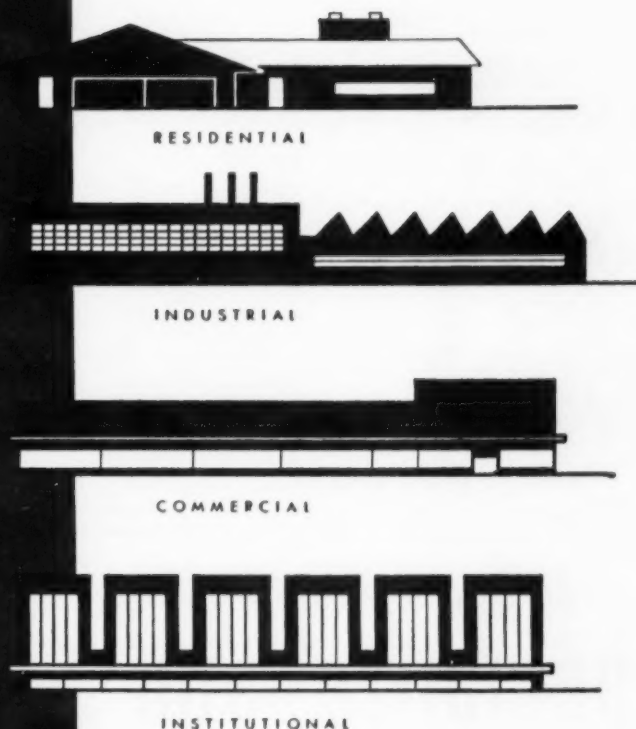
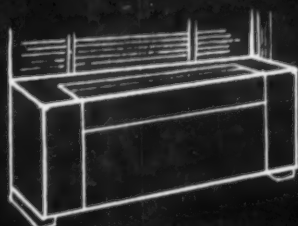
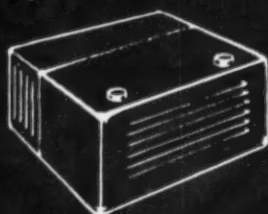
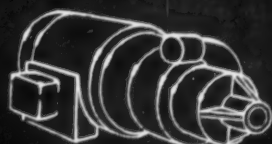
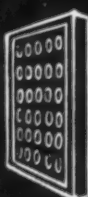
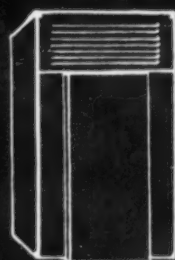
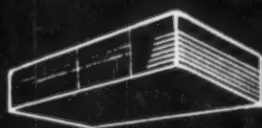
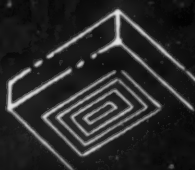
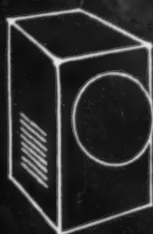


MUELLER BRASS CO. PORT HURON 14, MICHIGAN

Circle No. 54 on Reader Service Card

Air Conditioning Section

HEATING • CIRCULATION AND HUMIDITY CONTROL



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One More Reason Why AIR MART Should Air-Condition Auditoriums and Concession Stands in Your Indoor and Drive-In Theatre

One More Reason Why AIR MART Should Air-Condition Auditoriums and Concession Stands in Your Indoor and Drive-In Theatre



That's just what you get
in a Washington Packaged
Air Conditioner!



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**We Handle the Complete Job
Anywhere in the United States**

DESIGN . . . ENGINEERING
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**Our List of Satisfied Customers
Is Getting Longer . . .**

- Ophreum, St. Joseph, Mo.
- Axles, Shawnee, Kan.
- Truck, Jefferson City, Mo.
- Glen, Joliet, Mo.
- Roxy, Kansas City, Mo.
- Rialto, St. Joseph, Mo.
- Sierra, Atamogordo, N. M.
- Queen, Brown, Mo.

**Call Us for
Comfort Cooling
Within Your Budget**

AIR MART

Kansas City, Missouri

1993, 1994, 1995, 1996, 1997, 1998, 1999, 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018, 2019, 2020, 2021, 2022, 2023, 2024, 2025, 2026, 2027, 2028, 2029, 2030, 2031, 2032, 2033, 2034, 2035, 2036, 2037, 2038, 2039, 2040, 2041, 2042, 2043, 2044, 2045, 2046, 2047, 2048, 2049, 2050, 2051, 2052, 2053, 2054, 2055, 2056, 2057, 2058, 2059, 2060, 2061, 2062, 2063, 2064, 2065, 2066, 2067, 2068, 2069, 2070, 2071, 2072, 2073, 2074, 2075, 2076, 2077, 2078, 2079, 2080, 2081, 2082, 2083, 2084, 2085, 2086, 2087, 2088, 2089, 2090, 2091, 2092, 2093, 2094, 2095, 2096, 2097, 2098, 2099, 2100, 2101, 2102, 2103, 2104, 2105, 2106, 2107, 2108, 2109, 2110, 2111, 2112, 2113, 2114, 2115, 2116, 2117, 2118, 2119, 2120, 2121, 2122, 2123, 2124, 2125, 2126, 2127, 2128, 2129, 2130, 2131, 2132, 2133, 2134, 2135, 2136, 2137, 2138, 2139, 2140, 2141, 2142, 2143, 2144, 2145, 2146, 2147, 2148, 2149, 2150, 2151, 2152, 2153, 2154, 2155, 2156, 2157, 2158, 2159, 2160, 2161, 2162, 2163, 2164, 2165, 2166, 2167, 2168, 2169, 2170, 2171, 2172, 2173, 2174, 2175, 2176, 2177, 2178, 2179, 2180, 2181, 2182, 2183, 2184, 2185, 2186, 2187, 2188, 2189, 2190, 2191, 2192, 2193, 2194, 2195, 2196, 2197, 2198, 2199, 2200, 2201, 2202, 2203, 2204, 2205, 2206, 2207, 2208, 2209, 2210, 2211, 2212, 2213, 2214, 2215, 2216, 2217, 2218, 2219, 2220, 2221, 2222, 2223, 2224, 2225, 2226, 2227, 2228, 2229, 2230, 2231, 2232, 2233, 2234, 2235, 2236, 2237, 2238, 2239, 2240, 2241, 2242, 2243, 2244, 2245, 2246, 2247, 2248, 2249, 2250, 2251, 2252, 2253, 2254, 2255, 2256, 2257, 2258, 2259, 2260, 2261, 2262, 2263, 2264, 2265, 2266, 2267, 2268, 2269, 2270, 2271, 2272, 2273, 2274, 2275, 2276, 2277, 2278, 2279, 2280, 2281, 2282, 2283, 2284, 2285, 2286, 2287, 2288, 2289, 2290, 2291, 2292, 2293, 2294, 2295, 2296, 2297, 2298, 2299, 2300, 2301, 2302, 2303, 2304, 2305, 2306, 2307, 2308, 2309, 2310, 2311, 2312, 2313, 2314, 2315, 2316, 2317, 2318, 2319, 2320, 2321, 2322, 2323, 2324, 2325, 2326, 2327, 2328, 2329, 2330, 2331, 2332, 2333, 2334, 2335, 2336, 2337, 2338, 2339, 2340, 2341, 2342, 2343, 2344, 2345, 2346, 2347, 2348, 2349, 2350, 2351, 2352, 2353, 2354, 2355, 2356, 2357, 2358, 2359, 2360, 2361, 2362, 2363, 2364, 2365, 2366, 2367, 2368, 2369, 2370, 2371, 2372, 2373, 2374, 2375, 2376, 2377, 2378, 2379, 2380, 2381, 2382, 2383, 2384, 2385, 2386, 2387, 2388, 2389, 2390, 2391, 2392, 2393, 2394, 2395, 2396, 2397, 2398, 2399, 2400, 2401, 2402, 2403, 2404, 2405, 2406, 2407, 2408, 2409, 2410, 2411, 2412, 2413, 2414, 2415, 2416, 2417, 2418, 2419, 2420, 2421, 2422, 2423, 2424, 2425, 2426, 2427, 2428, 2429, 2430, 2431, 2432, 2433, 2434, 2435, 2436, 2437, 2438, 2439, 2440, 2441, 2442, 2443, 2444, 2445, 2446, 2447, 2448, 2449, 2450, 2451, 2452, 2453, 2454, 2455, 2456, 2457, 2458, 2459, 2460, 2461, 2462, 2463, 2464, 2465, 2466, 2467, 2468, 2469, 2470, 2471, 2472, 2473, 2474, 2475, 2476, 2477, 2478, 2479, 2480, 2481, 2482, 2483, 2484, 2485, 2486, 2487, 2488, 2489, 2490, 2491, 2492, 2493, 2494, 2495, 2496, 2497, 2498, 2499, 2500, 2501, 2502, 2503, 2504, 2505, 2506, 2507, 2508, 2509, 2510, 2511, 2512, 2513, 2514, 2515, 2516, 2517, 2518, 2519, 2520, 2521, 2522, 2523, 2524, 2525, 2526, 2527, 2528, 2529, 2530, 2531, 2532, 2533, 2534, 2535, 2536, 2537, 2538, 2539, 2540, 2541, 2542, 2543, 2544, 2545, 2546, 2547, 2548, 2549, 2550, 2551, 2552, 2553, 2554, 2555, 2556, 2557, 2558, 2559, 2560, 2561, 2562, 2563, 2564, 2565, 2566, 2567, 2568, 2569, 2570, 2571, 2572, 2573, 2574, 2575, 2576, 2577, 2578, 2579, 2580, 2581, 2582, 2583, 2584, 2585, 2586, 2587, 2588, 2589, 2590, 2591, 2592, 2593, 2594, 2595, 2596, 2597, 2598, 2599, 2600, 2601, 2602, 2603, 2604, 2605, 2606, 2607, 2608, 2609, 2610, 2611, 2612, 2613, 2614, 2615, 2616, 2617, 2618, 2619, 2620, 2621, 2622, 2623, 2624, 2625, 2626, 2627, 2628, 2629, 2630, 2631, 2632, 2633, 2634, 2635, 2636, 2637, 2638, 2639, 2640, 2641, 2642, 2643, 2644, 2645, 2646, 2647, 2648, 2649, 2650, 2651, 2652, 2653, 2654, 2655, 2656, 2657, 2658, 2659, 2660, 2661, 2662, 2663, 2664, 2665, 2666, 2667, 2668, 2669, 2670, 2671, 2672, 2673, 2674, 26

WAbush 3-0404

with a program of advertising

in regional publications going to theater operators in the Midwest air conditioning has benefited

KNOWING just a little bit more about the problems and profit possibilities of "special" kinds of prospects for air conditioning equipment has helped Air Mart, Inc., Kansas City dealer-contractor, develop some profitable new avenues of business for itself . . . virtually without competition from other air conditioning firms.

According to Vic Lindeman, one of the principals of the company, Air Mart became convinced of the value of specialization rather early in its business life. The territory that the company serves has always been an active one, from an air conditioning standpoint. There were dealers aplenty; so on most of the "ordinary" jobs — restaurants, clothing shops, drug stores, for instance, the competitive situation was pretty rugged.

"We figured our best chance for a steady, profitable business was to select one or two fields with real good potentials, and study the problems in these markets until we knew them better than anybody else who

had air conditioning equipment to sell. If we could qualify as "experts" in these special fields, we'd have the inside track for business there — not only when it came to going after these particular jobs in the first place, but by being recommended by customers for whom we'd already put in successful systems," is the way Lindeman explains it.

Lindeman is quick to add that deciding to specialize in certain fields doesn't imply that the company isn't interested in the whole broad range of air conditioning installations. What it means is simply that Air Mart has set itself up to do certain jobs especially well, and promotes its services to prospects who can benefit from them.

The most spectacular success enjoyed by Air Mart has been with small theater chains and independent neighborhood theaters.

Many of these smaller theaters do not have air conditioning. With competition from outdoor drive-in movies, and from television, on the increase, business



... **exhibits** at equipment shows and meetings attended by motion picture house owners and managers. Leads were developed at these affairs for follow-up later.

... **hand-outs** and other promotional literature aimed specifically at the theater market. Emphasizing the profits story, these pieces invited requests for more details.

with some of them had fallen off to such a degree that they were forced to shut down altogether. At best, the ventilating systems that most of them had did nothing to encourage summer attendance, and cut further into operating profits.

Having decided that the small theater field, for one, was a potential market worth specializing in, Air Mart went out after the business. Packaged units, the company decided, were a natural for applications of this sort. They could be fitted into existing interiors with minimum alterations; and if they were located advantageously, could provide comfortable indoor conditions with the least possible expenditure.

Theater operators, the company knew, were eager for ideas that would revive their profit possibilities. Air conditioning could be an answer. All that was needed was a starting place.

Assembling its figures on costs vs. profit advantages, Air Mart started out cold. As Vic Lindeman puts it, "we just went out and started talking to operators of

small theater chains. We knew they wanted to get their movie customers back; and we thought we knew a way they could do it."

The company struck pay dirt when it sold the management of the Kimo Theater, in Kansas City, on installing an air conditioning system to replace the washed-air system it had previously used. This was only the beginning; but it was a good beginning — for Air Mart has used it as a springboard to installations in such other small movie houses as the Aztec, in Shawnee, Kan.; the Orpheum and the Rialto, in St. Joseph, Mo.; the State, in Jefferson City, Mo.; the Glen, in Joplin, Mo.; the Owen, in Branson, Mo.; the Roxy, in Kansas City; and a brand-new theater, the Sierra, in Alamogordo, N. M.

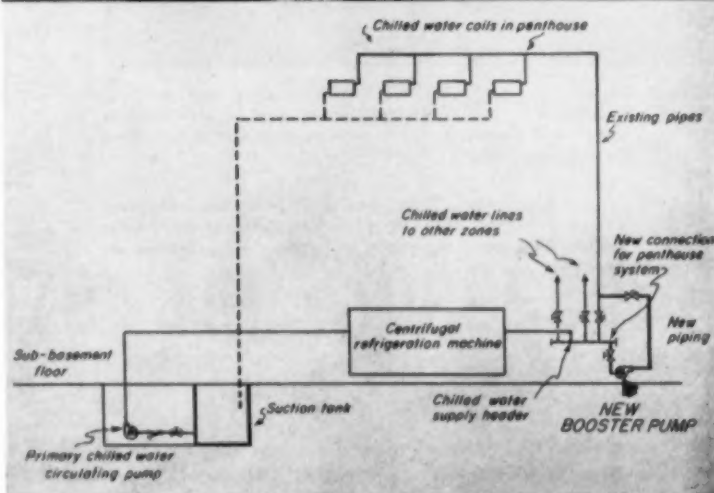
All of the theater jobs the company has done, Lindeman says, have been with packaged units. Installations have ranged between 30 and 75 tons, using water-cooled units for the most part with Air

Continued on page 96

CHILLED WATER flowing from the booster pump in the basement of the Dime Savings Bank building to chilled water coils in a rooftop penthouse is adjusted by an operating engineer. The schematic diagram shows the relative location of the booster pump and the other elements of the building's air conditioning system.

BOOSTER PUMP SAVED 90%

... of anticipated new equipment costs when a Brooklyn bank building expanded its air conditioning system



WHEN a suddenly increased air conditioning load demands greater capacity from a coolant circulation system than existing equipment can provide, what is the answer?

The obvious solution would seem to be replacement of the primary circulating pumps with newer, more powerful equipment. But the obvious solution isn't always the most economical one. That's the financial lesson learned by the management of the Dime Savings Bank of Brooklyn when faced with

this particular problem.

Bank officials, working in conjunction with E. Kalisch, Inc., New York air conditioning engineers who had installed the additional air conditioning equipment, found that they could accomplish the desired result at less than 1/10 the cost of installing two new primary pumps by simply using a small booster pump to put more pressure behind the cooling fluid.

The problem of inadequate coolant circulation turned up last year when the bank had Kalisch in-

stall a 220-ton centrifugal air conditioning machine in the sub-basement to provide for the increased cooling surface. The new unit supplemented two others, a 92-ton machine and a 150-ton machine, in cooling the bank's overall floor area of 165,000 sq. ft.

Through the years, the bank has steadily increased its lighting load and personnel until today it employs 600 persons. A few years ago it made a 5-story addition to its older building, increasing the area at that time by 75,000 sq. ft.

When four systems of chilled water coils were installed in the penthouse, it became essential to the bank's entire air conditioning system that the coolant have enough head to pass through these coils at the required flow rate and pressure.

Two 60-hp circulating pumps were pumping chilled water from a pit in the sub-basement floor to the penthouse coils, an 8-story lift of approximately 150'. They were pumping 1000 gpm each under 150' pressure into the chilled water header. But they were delivering water to the coils at only 100 gpm under 12 to 24' pressure.

For normal air conditioning requirements, the bank had to supply the penthouse coils with 250 gpm under 75' pressure.

While replacement of the primary circulating pumps seemed indicated, the pit housing these pumps was too small to accommodate the size required. It could not be enlarged without going to considerable extra expense.

At this point, the Kalisch firm installed a 7½-hp Ingersoll-Rand single-stage "Motorpump" just below the chilled water supply header. This is an electrically driven centrifugal pump especially designed for air conditioning service.

The small booster pump raised the pressure behind the chilled water. This extra boost now forces the coolant into the penthouse coils at the rate of 250 gpm under 75' pressure, which is more than enough to meet even extreme needs.

Cost of the booster pump installation was between \$600 and \$700. Two new primary pumps would have cost more than \$4,000 for equipment alone. Their installation would have made it necessary to change existing electrical circuits at an additional estimated cost of \$2,000. Finally, there would have been the costly problem of enlarging the pit for the pumps.

Now, with the booster pump hooked up, the system works like this:

Water is drawn from a 1200-gal. masonry tank in the sub-

Continued on page 108



Put the Doctor on the Payroll

A surprising number of people suffer from an allergy of one type or another. Because of the nature of their affliction, most of these people definitely would benefit from an air conditioned atmosphere. Consequently, they should be prime prospects for residential air conditioning.

Selling them should be relatively simple. The problem for the air conditioning dealer, therefore, is how to locate these allergy sufferers. Determined to capitalize on this ready-made market for residential air conditioning equipment, Lee Nemmer, veteran heating and air conditioning contractor of Denver, Colo., finally came up with the answer.

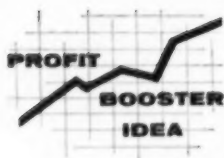
His idea was as simple as it was effective. He contacted the local medical association for the names of physicians specializing in allergy treatment. Then from the dozen or more names he obtained in this manner he selected one physician whom he knew to be a well established practitioner with an extremely large number of patients.

Nemmer's next move was to go directly to this physician with an open-handed offer from which both parties stood to benefit. At no cost to the doctor, he offered to equip the physician's suite of offices with an air conditioning system complete with an electrostatic filtering device.

In return, all Nemmer asked was the names of the doctor's allergy patients, so that he could contact them with his residential air conditioning proposal.

As it developed, Nemmer had no difficulty in working out this arrangement with the physician, for the doctor himself proved to be much interested in the opportunity of observing at first hand what effects the conditioned air, filtered free of dust and pollen, would have upon his patients while they were undergoing treatment in his office. Thoroughly pleased with the installation, the doctor quickly became convinced of the beneficial results of air conditioning for his patients. Since that time, Nemmer has received a steady stream of names of allergy sufferers, most of whom already have noticed the relief they experienced in the doctor's air conditioned office and so are psychologically already softened up for Nemmer's residential air conditioning sales story.

The result: a growing number of allergy sufferers who have found that properly planned air conditioning can bring them a large measure of relief, and a correspondingly growing list of satisfied customers for the Nemmer organization.



... besides being profitable
in themselves by proving to be a valuable
source of additional dollar volume ...

Filter Service Plans

by Larrie L. Isenring, Sales Engineer, Research Products Corp.

ARE you using an air filter servicing plan as a source of new business? If you're not, perhaps you should be.

Although air filters are an extremely necessary component of air conditioning and heating equipment, their maintenance is often neglected. The organization alert enough to establish and promote a regular replacement service for throwaway type filters, or a cleaning service for washable type filters, can parlay this activity into a valuable producer of additional business.

In addition to its value as a means of stimulating equipment sales, filter service business has built up to such a volume in many metropolitan areas that some dealers have set up separate departments for this purpose. Operations of this type have proved to be profitable to the dealer and economical to the user.

Operation of a filter replacement or cleaning service gives the dealer an opportunity to inspect the customer's equipment at regular intervals, and to recommend to the customer additional needed items, accessories, or services.

If the men handling the actual filter changing operation are properly trained in what to look for when they make these service calls — and given an incentive for their "bird-dogging" efforts — an otherwise routine activity can produce leads not only to other maintenance jobs but often to sales of complete new air conditioning or heating systems.

The very purpose for which air filters are incorporated into equipment — removal of dust, bacteria,

and allergens from the air passing through — implies that they will become soiled at a rate influenced by the severity of the individual installation, and by the type of filter construction. Yet many dealers, after they have installed new equipment, leave the customer "on his own" when it comes to filter maintenance, or give him only the sketchiest notion of their importance in the overall performance of his equipment.

Filters, at the end of their service cycle, will either fail to remove dust effectively, or reduce the operational efficiency of the equipment in which they are installed. Some typical effects can easily be illustrated.

When filters installed in air conditioners are neglected, the air flow through the unit is either curtailed, or dirt is allowed to pass through the filter and collect on the evaporating coils. The result of this condition is a lowered temperature of the coils, causing icing, which hampers the operation of the air conditioner and results in a "no cooling" complaint.

The volume of air flow through a warm air furnace, in the same way, will be reduced as the resistance from clogging filters is increased. Less warm air will be delivered to the area to be heated, and the dealer will get a complaint that there is "no heat".

A recent development in the filter industry is a dust and odor removing adhesive. Aluminum washable filters using this adhesive have a way of announcing when their service cycle is due. The dust and odor removing adhesive will become saturated and allow traces of odors to pass through, reminding the user that filter servicing is needed.

here are some typical filter cleaning plans . . .

- Service 1** Cleaning service *only* at plant. Customer delivers and picks up filters.
- Service 2** Cleaning service at plant including pick-up and delivery service by dealer.
- Service 3** Cleaning plus removing and reinstalling filters into the filter bank for customer who has an extra set of filters.
- Service 3A** Same as Service 3 when filter bank is unusually hard to reach.
- Service 4** Same as Service 3 with service laundry supplying exchange filters.
- Service 4A** Same as Service 3A with service laundry supplying exchange filters.

Build Equipment Sales

. . . and a suggestion of the income they can produce

	Quantity				Minimum Charge
	100 & over	50 - 99	11 - 49	1 - 10	
Service 1	.25 ea	.30 ea	.35 ea	.45 ea	1.00
Service 2	.35 ea	.40 ea	.45 ea	.55 ea	2.00
Service 3	.55 ea	.65 ea	.65 ea	.65 ea	3.00
Service 3A	.60 ea	.70 ea	.70 ea	.70 ea	3.00
Service 4	.75 ea	.85 ea	.85 ea	.85 ea	3.00
Service 4A	.80 ea	.90 ea	.90 ea	.90 ea	3.00

NOTE: The suggested prices above are for standard, lightweight $\frac{1}{2}$, 1 and 2" aluminum filters up to and including 20 x 25 x 2". For heavy-weight filters, add 5 to 10 cents per filter. Add 5 cents per filter for optional odor removal adhesive.

Obviously, the simplest way to determine when a filter or bank of filters needs replacement is to make a visual inspection. But there are other ways, too.

One is to determine a time cycle, such as every 30 days for equipment in average usage conditions, or one to two weeks when usage conditions are unusually severe.

Another method is to install a device, such as a slant gauge, which measures pressure drop and in this way warns when filters need replacing.

Still another — and this usually comes up in con-

nection with a service complaint — is when there is a noticeable drop in the cooling or heating capacity of the filtered equipment.

Probably the most practical method is to determine a definite time cycle for filter inspection. Not only is it a service that the customer appreciates — mostly because it is something that he neglects, or dislikes, to do himself — but it also helps greatly in building good will by improving the operation of his air conditioning or heating equipment.

Continued on page 102

NEW

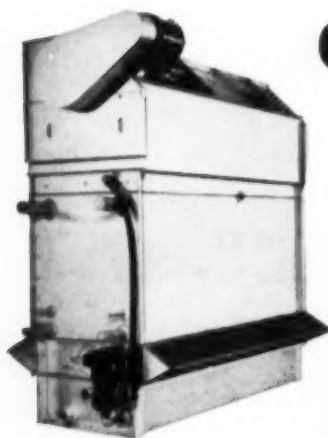
Complete  Line of

EVAPORATIVE CONDENSERS

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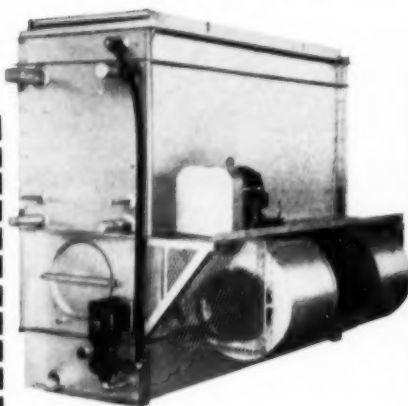
COOLING TOWERS

10 to 400 Tons



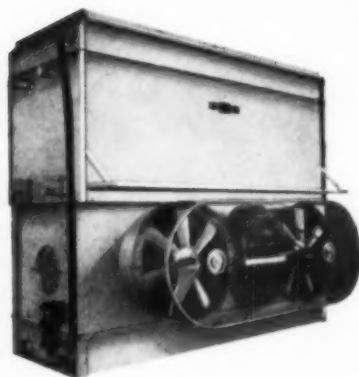
DRAW-THROUGH

Quiet-Operating
Centrifugal Fan
Where Floor Space is a Factor



BLOW-THROUGH

Quiet-Operating
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Dry Fan with Maximum Accessibility



BLOW-THROUGH

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Circle No. 55 on Reader Service Card

You've often heard someone say . . .

"It Isn't the Heat—It's the Humidity!"

That's a familiar way of explaining why summer weather is sometimes so uncomfortable, but it's not necessarily true. Actually, it might be either or both—for a lot depends upon the proper combination of the two.

IT is universally recognized that both dry bulb temperature and relative humidity are important to the comfort of people in an air conditioned room. It is not so generally recognized, however, that a desired sense of warmth or coolness may be achieved with any one of several combinations of temperature and humidity.

This has been confirmed by tests on people subjected to various temperature-humidity combinations. Results of these tests have been tabulated by The American Society of Heating and Air Conditioning Engineers.

Effective temperature is a term used to indicate the effect of a combination of temperature and humidity upon occupants of a conditioned space. It is the temperature of saturated air which would give the same sense of warmth or coolness.

As an illustration, the commonly used inside design condition of 80° dry bulb temperature and 50% humidity has been found to produce about the same sensible effect as 74° saturated air, so it is said to produce a 74° effective temperature.

Other combinations of dry bulb temperature and percentage of relative humidity which also will provide a 74° effective temperature include: 76° at 80%, 77° at 70%, 78.5° at 60%, 81.5° at 40%, and 83° at 30%.

It has been found in practice that relative humidity exceeding 80% or below 30% is rarely considered desirable, regardless of dry bulb temperature. The maximum dry bulb temperature generally considered comfortable, regardless of humidity, is 82°, although effective temperatures are listed for slightly higher dry bulb temperatures.

Continued on next page

TABLE 1:

Effective temperatures produced by various combinations of temperature and humidity.

by Edward Dowis

		DRY BULB TEMPERATURE																	
PERCENT RELATIVE HUMIDITY		65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82
	80	64	65	66	67	67.5	68.5	69	70	71	72	73	73.5	74.5	76	77	77.5	78	79
	70		64	65	66	67	67.5	68	69	70	71	72	72.5	73.5	75	75.5	76	77	78
	60		63.5	64.5	65.5	66	66.5	67.5	68	69	70	71	71.5	72.5	74	74.5	75	76	77
	50			64	65	65.5	66	67	67.5	68	69.5	70	70.5	71.5	73	73.5	74	75	75.5
	40				64	65	65.5	66	66.5	67.5	68.5	69	70	70.5	71.5	72	73	73.5	74
	30				63	64	64.5	65	66	66.5	67.5	68	69	69.5	70.5	71	71.5	72	73

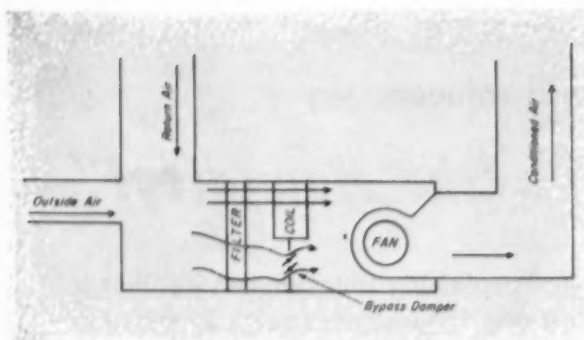


FIG. 1—By-pass damper installed in air handling unit.

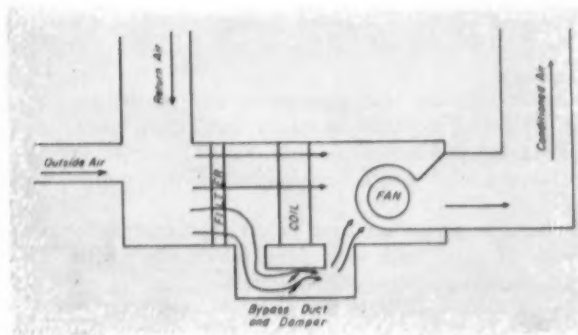


FIG. 2—By-pass damper installed in special by-pass duct.

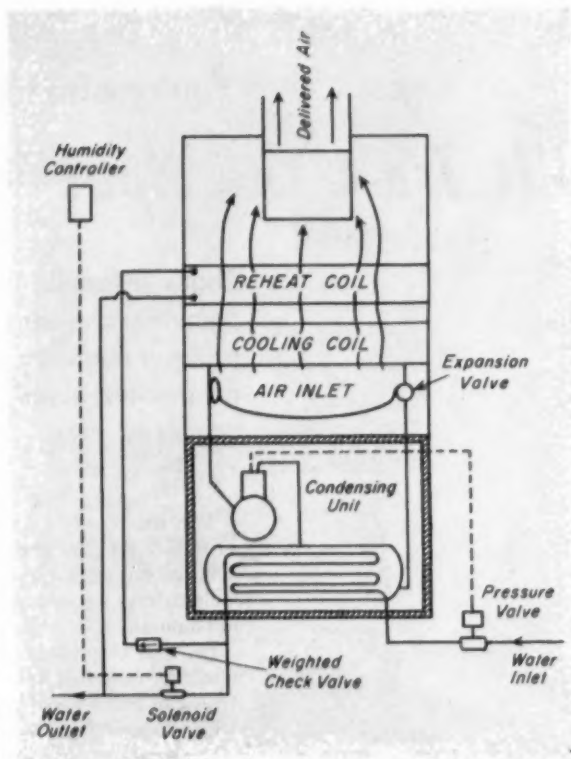


FIG. 3—Application of reheat coil using condenser water.

"IT ISN'T THE HEAT — IT'S THE HUMIDITY!"

Continued from preceding page

Table 1 shows the approximate effective temperatures resulting from various combinations of temperature and humidity.

Effective temperature is not measurable with a thermometer, since it represents the relative sensible effect of humidity and temperature combined. It will be observed that effective temperature falls farther below the dry bulb reading as humidity is lowered. This is because more rapid vaporization of moisture from the body in a low humidity atmosphere has additional refrigerating effect right where it can be felt.

The effective temperature that will afford maximum comfort to most people, also the best temperature-humidity combination to attain it, will depend largely upon the time spent by occupants in the conditioned space. Effective temperatures indicated in the table were determined by reactions of people who had been in conditioned atmospheres for three hours or longer; long enough to be thoroughly accustomed to them.

Dry bulb temperature is more important than humidity in short occupancy installations, which include many stores where purchases are made in a relatively

short time. The immediate reaction of people upon entering a conditioned space is due almost entirely to dry bulb temperature.

To achieve maximum comfort for all occupants, dry bulb temperature should be regulated to provide the desired reaction in people entering the space. Humidity may then be regulated to provide a satisfactory effective temperature for those who are in the space continuously.

Installation of a standard package air conditioner, or a number of them, may not seem to give adequate control of humidity. The original design of the conditioner, if properly selected, included provision for handling cooling loads with normal sensible-latent ratios.

Absence of a humidity control instrument does not indicate that consideration for humidity has been neglected in the installation of the system. More often than not, the system can be adjusted to maintain any desired humidity-temperature ratio without specific instrumentation.

A properly compiled cooling load estimate specifies sensible and latent Btu per hour separately. Conduction and solar loads are entirely sensible. People and ventilating loads are both sensible and latent, the ratio depending upon the rate of activity of people and upon outside and inside air temperature and humidity. Lighting and power loads are sensible, but

restaurants, beauty parlors and some other establishments have internal humidity loads commonly called latent.

For selecting equipment, the cooling load is stated in total Btu per hour, and the percentage which is sensible. For example, a typical load was estimated to be 55,500 Btu/hr sensible and 30,250 latent. Total load will be 55,500 plus 30,250, or 85,750 Btu/hr. Sensible percentage will be 55,500 divided by 85,750, or 65%. This load would be stated: Total load 85,750 Btu/hr, 65% sensible.

Estimates should be compiled with consideration for any particular conditions of temperature and humidity which may be desired.

The following complaints indicate that a change in the sensible-latent cooling ratio may be necessary.

(1) People coming into the conditioned space complain of being chilled, while those inside continuously say it is about right or too warm.

(2) A cold clammy feeling; excessive perspiration.

(3) People in the conditioned space continuously are comfortable, but those coming from outside fail to get the lift expected when coming into a conditioned area.

(4) The system just seems to lack cooling capacity.

The above are strictly comfort complaints. In addition there may be complaints of moist clothing, mildew or moisture in salt, sugar and condiments.

The first two complaints indicate excessive humidity. When evaporation of body moisture is retarded by a humid atmosphere it is necessary to set the thermostat at a lower temperature in order to maintain a desired sense of coolness for people remaining in the room for some time. The excess temperature difference is apt to be disagreeable to persons entering from outside. Failure of body moisture to vaporize as fast as released results in the sensation commonly called cold and clammy.

Humidity in a conditioned area results from failure to remove moisture from the air as fast as it is released

by people, ventilating air or other sources. To correct high humidity, it is necessary to increase the dehumidifying rate in proportion to total cooling. Conditions which favor a high dehumidifying rate include: (1) low coil temperature, (2) low air velocity through coil, (3) high velocity of water through water cooling coil, (4) multiple row or deep coils, (5) coils with high ratio of tube to fin surface.

The first three conditions can be regulated after a system has been installed. Four and five should be given consideration in the original design when a high ratio of moisture removal may be required or when alterations are contemplated. When total capacity is adequate, increasing the moisture removal rate should present no great difficulties.

Moisture can be removed from air by a cooling coil only when temperature is reduced below the dew point. The more that coil temperature is reduced below the dew point of air, the greater will be the ratio of moisture removal to sensible cooling.

The simplest way to reduce coil temperature is to reduce air velocity through the coil. As less warm air is brought in contact with the coil surface, less refrigerant is vaporized in the tubes and the compressor is able to pull a lower temperature.

An equally important result of lowered air velocity is that air remains in contact with coil surface longer, hence is brought nearer to coil temperature. Air velocity can be reduced by dampers or by slower fan speed. Package conditioners are commonly equipped with variable speed fan motor pulleys.

To control humidity without disturbing air distribution, two methods are commonly employed: (1) by-pass damper, and (2) reheat.

The by-pass damper is illustrated by Fig. 1. Air handling units are commonly equipped with by-pass dampers. One can easily be installed in a small duct which can be connected so as to pass air around the coils as shown in Fig. 2.

Continued on page 104

Step-by-Step Solutions for Humidity Problems

To attain maximum comfort for both continuous and short-time occupants:

1. Set the dry bulb thermostat at a temperature comfortable to people entering the room.

2. Regulate humidity to provide an effective temperature that will satisfy continuous occupants.

To increase the dehumidifying rate or lower humidity:

1. Reduce air velocity through coil.

2. Use maximum refrigerating capacity possible without frosting coil.

3. Open by-pass dampers.

4. Use some form of reheat cycle.

To get maximum overall capacity and maximum sensible cooling ratio regardless of humidity:

1. See that by-pass dampers are closed and that no air leaks around cooling coil.

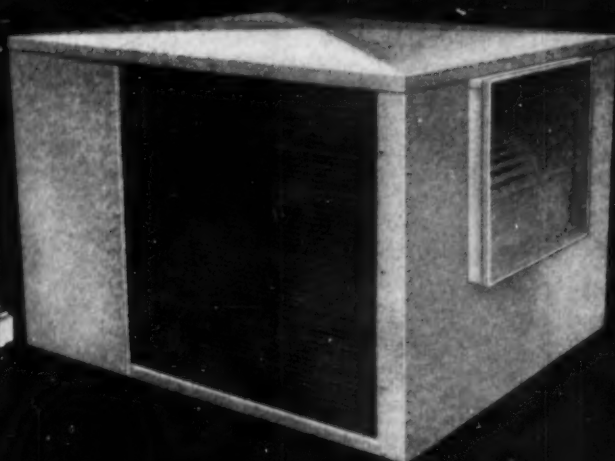
2. See that there are no undue restrictions in air distribution system, particularly clogged filters.

3. Set fan speed to maximum possible.

4. See that refrigerant charge is correct and that expansion valve is adjusted to utilize all of coil.

SO HALSTEAD & MITCHELL ENGINEERS SAID . . .

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***Up to 15% More at the Condenser Assures Required BTUH at the Evaporator**

Halstead & Mitchell air-cooled condensers for residential air conditioning have oversize coils with exclusive Turbu-Flo fin design. The embossed, streamline pattern provides better "air wash" which reduces air film resistance and improves heat transfer by up to 15%. This built-in reserve assures peak efficiency and rated condenser capacity even on high ambient days.

Model ACR Condensers include a centrifugal blower for quiet handling of large air volume, heavy duty motor—all compactly arranged within a handsome, weatherproofed cabinet.

Space is provided within the cabinet for the installation of compressor, receiver and controls to make a complete air-cooled condensing unit. Any style compressor can be mounted within the condenser. Available for use with Refrigerants -12 or -22, in 2, 3 and 5-ton sizes. Call your Halstead & Mitchell Wholesaler for delivery and price information or write *Halstead & Mitchell, Bessemer Building, Pittsburgh 22, Pa.*



Circle No. 56 on Reader Service Card

WHO SAYS

WE'RE LOUSY SALESMEN?



AS we expected, the article in our May issue titled "Air Conditioning Men Are Lousy Salesmen" stirred up quite a bit of interest. Apparently it put the finger on some problems of salesmanship that have been bothering sales managers at all levels of the air conditioning industry.

Of the many letters of comment we received, three seemed to us to represent the most thoughtful appraisals of the several points raised by the original article. Excerpts from these letters are reproduced here. We believe readers will find them as interesting and thought-provoking as we did. — The Editors.

"First, we should acknowledge the fact that . . . the salesman's basic need is to earn a living."

EDITOR:

While Mr. Self is quite right on the general points he makes in his article "Air Conditioning Men Are Lousy Salesmen", there is one important element which calls for a closer look! Of course, this does not cancel out his argument, but at least it helps to place the responsibility in the proper direction instead of putting the whole load around the much bedeviled "Salesman".

When the author demands that "your Air Conditioning has got to be better than all the rest", he simply flies in the face of all the established facts. Look at the automobile market of today! Who has the temerity to say that only one make combines all the features of superiority and offers more real value for your dollar than any other? Why are we so helpless in the face of the modern invasion of

the "Hun", classified as "Operation Volkswagen", when the Mark II, the Cadillac, the Imperial or any other similar brand is incontestably recognized as the American paragon of all virtues?

By so doing, Mr. Self clamors for the universal application in all cases of that rare combination of circumstances which constitutes the "Ideal Situation". The only individual who can get away with this is one with a flexible conscience or a severely restricted intelligence!

First we should acknowledge the fact that, not unlike others, the salesman's basic need is to earn a living in order to meet his obligations, rather than work his heart out in the process of building monuments for this or that manufacturing group.

Perhaps the idea can be better illustrated by scrutinizing a fairly

typical cast and learning from it how difficult it can become at times to meet the author's desirable requirements.

Jim Baker sells the leading name-product in the field of Air Conditioning in his area. He has been thoroughly indoctrinated in its sales propaganda and has dutifully swallowed it "hook, line and sinker". As a result, he is sincerely convinced that everyone who fails to buy from him for any reason at all suffers from acute mental deficiency and is wholly unfit to consume his daily quota of free oxygen a minute longer.

He is devoid of any fair standard of comparison, because he has been trained in an atmosphere of prejudice and astigmatism, based either on incomplete information or purposeful distortion. Obviously he lacks the time, the inclination, and even the opportunity to check and appraise the equally prejudiced and exaggerated claims of competitive offerings.

Thus he goes on for quite a few years with the ordinary ups and downs. Then a sudden change oc-

LETTERS

Continued from page 77

curs, either in management, sales policy, or territorial allocation, which makes it mandatory for him to look for a new connection. Of course he finds one, provided he is not yet forty, because salesmen of any kind are scarce nowadays.

Jim happens to be a man of integrity. He was honestly and sincerely sold on product A. All at once he is expected to sell product B, C, D or what have you, with the same plan, the same breast-tone of inner conviction, which he formerly applied to A. Can he do it? Especially if his new job operates even more obviously under raw jungle law than his former?

And when he must change again, and yet again, can he switch his convictions with the same facility as he changes his shirt? Remember, Jim is an honest man, not a stupid one! But to how many have these two appellations become synonymous in our day?

Every place Jim goes he runs into the same inflexible demand to apply all the superlatives without reservation to the new product until he either becomes thoroughly calloused — or gags! In neither condition does he qualify as a successful rebuttal to Mr. Self's classification.

Now obviously a woman is a virgin as long as she remains one. Should we lead her out at sunrise to be shot because she decided to assume adult responsibilities? Or should we shoot Jim Baker and company likewise at dawn because salesmen must make their mark come hell or high water and rarely

perceive more than the outermost surface of anything?

A lot more could be said on this subject, but it would be so generally lost in this materialistic age that I would much better concentrate on the whys of "JANITROL" Air Conditioning being the sole road to true comfort in Air Conditioning, all the

Carriers, Tranes, G-Es' Frigidaires, Westinghouses, Yorks, Brunners, Worthingtons, UsAirCos, Lipmans, American Blowers, Gibsons, Lingles etc. ad nauseam, notwithstanding!

FERD ZOPPEL, P. E.

President

Columbus Refrig. & Heating Co.
Columbus, Ohio

"... lack of proper business knowledge is one cause of conditions in our industry"

EDITOR:

First, let us state that this writer is not, in general, in agreement with the article written by Mr. Frank B. Self in the May issue of *Commercial Refrigeration and Air Conditioning*, although certain points therein are uncontested. In over twenty-two years in the sales end of this industry, under four different manufacturers, I have read or heard the contents of this article innumerable times. The lyrics may have varied slightly, but the music has been the same.

He mentions at the beginning of the article the growth, net income, financial difficulties and frequency of bankruptcy of the industry. While there is no argument with this paragraph as a whole, the category of "industry" to which he refers is debatable. It is only a portion of the industry. This sad plight is not true in relation to the manufacturer, as evidenced by the contents of the business pages of our newspapers, filled with glowing financial reports of Carrier, Trane, Chrysler, General Electric, General Motors, ad infinitum.

Why this alleged difference in a

highly lucrative branch of the business at the manufacturers level, while so many of our brethren of the contractors level exist on a hand to mouth basis, with many hands never reaching the mouth?

This condition, it is true, is substantially an inherent fault of the contractors, but the majority of the blame is due to the mad production race and the methods of distribution employed by these producers. It may be an unavoidable result of the industry's astronomical growth, but it is an indisputable fact that one segment of the industry is maturing while another experiences the growing pains.

Each year, as the manufacturer increases his production facilities through expansion and advanced methods of assembly line production, the sales and distribution end of the manufacturer's organization prostitutes itself by vacillation and by talking out of different sides of the company's collective mouth.

One department of the company will set up a distributor-dealer organization that will set such unrealistic high quotas for a distributor (with the implied threat that he will lose the distribution rights if the quota is not maintained) that the distributor is forced either to choke upon the equipment or, as an alternative, to appoint as a dealer any possible source of disposing of the equipment, regardless of the qualifications of that source.

Upon occasion, this distributor is even in direct competition with the dealers to whom he sells equipment. These unqualified dealers are, in many cases, "back porch" operators who install equipment at a markup only sufficient to cover the wages for the work they actually perform in completing the installation.

Continued on page 110

"... sales managers should be criticized, too"

EDITOR:

I have just finished the article by Mr. Self, the title of which is "Air Conditioning Men Are Lousy Salesmen", and the following are my comments:

No. 1 — I don't agree with him as far as I am concerned.

No. 2 — I do agree with him as it pertains to the Air Conditioning industry, including many of the men who are the heads of their respective companies.

No. 3 — I don't think he goes far enough in his criticism. In my opinion, he also should criticize the heads of companies and the sales managers for their inability to convey to their salesmen their knowledge of salesmanship. The above criticism applies to the writer, as well.

GEORGE T. HOWE

President

Accurate Heating & Cooling Corp.
Chicago, Ill.

DETROIT NO. 714

AIR CONDITIONING EXPANSION VALVES



☆ Broad Range of Application

2 to 10 tons—12—3 to 17 tons—22

☆ Sweat Connection Sizes

Inlet $\frac{1}{2}$ " to $\frac{3}{8}$ " O.D.—Outlet $\frac{3}{8}$ " to $1\frac{1}{8}$ " O.D.

☆ "G" Charge Level Action Feeler Bulb

Minimizes surge for very close superheat control and maximum valve operating efficiency.

☆ Easy To Service

Custom charged power elements can be interchanged for different refrigerants and various capacities.

Entire valve easily disassembled for inspection and cleaning, without removing from the line.



Also available with other Detroit custom charges; "C" for commercial, "Z" for low temperature.

THE 790-L DISTRIBUTOR (2 to 8 passes) is used with the 714 Valve or any O.D. outlet connection expansion valve of comparable capacity. All outlet circuits are $\frac{1}{4}$ " O.D.

THE 790-M DISTRIBUTOR (9 to 12 passes) is a solder connection distributor for the 714 Valve or any other O.D. outlet connection valve of comparable capacity. All outlet circuits are $\frac{1}{4}$ " O.D.

Quality Protects Your Investment-- AMERICAN-Standard Quality Is Available At No Extra Cost.



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DETROIT CONTROLS

Division of AMERICAN-Standard



Canadian Representatives: RAILWAY AND ENGINEERING SPECIALTIES LTD., Montreal, Toronto, Winnipeg

Circle No. 57 on Reader Service Card

AIR CONDITION MORTUARY CHAPELS AND PARLORS AT LOW COST!



Application: Striffler's Mortuary in Columbus, Georgia.
15 Ton Load—3 HP Condensing Unit.

NO COSTLY ALTERATIONS!

Designed specifically for peak loads of short duration, the DOLE *Ice-Cel* System is the answer to the most efficient and most economical air conditioning of mortuaries. In the above installation three funerals a day have been handled easily, leaving a sufficient reserve capacity for special uses. The compact construction of an *Ice-Cel* unit permits easy, convenient installation in the least amount of space. Original investment is small. Operating costs are low.

Whether remodeling or building a new mortuary, it will pay you to check the advantages of a DOLE *Ice-Cel* Air Conditioning System.



DOLE REFRIGERATING COMPANY

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103 PARK AVENUE, NEW YORK 17, N. Y.

In Canada: Dole Refrigerating Products Limited
44 Elgin Street, Brantford, Ontario

Write for more information on the DOLE *Ice-Cel* unit. No obligation, of course.



Ice-Cel UNITS

THE BEST IN AIR CONDITIONING

Circle No. 58 on Reader Service Card

USEFUL LITERATURE On Air Conditioning

To obtain the information described below, simply circle on the postcard in this issue the key numbers of the items you wish to receive. We will forward your requests to the companies concerned.

FAN SELECTION TABLE is one of many features of four-page Bulletin 51-102, by Chicago Blower Corp., Chicago, Ill., describing its new "spid" induced draft fans for use with boilers ranging from 5 to 214 hp. Illustrated publication contains performance tables, dimensions, sample specifications, and construction features for both cast-iron, direct-drive and steel-plate, V-belt-drive, induced fans.

Circle No. 137 on Reader Service Card

IMPROVED CORROSION INHIBITOR for closed circulating water systems is shown in a new 6-page folder released by Hagan Chemicals & Controls, Inc., Pittsburgh. Two-color folder lists advantages of Corrosion Inhibitor CS, including its ability to protect steel and other metals such as copper, brass, aluminum and solder. Schematic drawings illustrate use of product in hot water heating systems, diesel engine cooling systems and air conditioning systems.

Circle No. 138 on Reader Service Card

SELECTION TABLES for each of the 26 standard sizes of its complete line of grilles and registers are offered in 66-page catalog (No. 1-57) by Waterloo Register Co., Inc., Waterloo, Iowa. Two-color publication contains 32 photographs and 21 drawings. Recommended outlet velocities are given for numerous applications.

Circle No. 139 on Reader Service Card

HEATING-COOLING THERMOSTAT manufactured by Powers Regulator Co., Skokie, Ill., is described in Form P-50. Heating and cooling positions are depicted in charts. Illustrated photo series explains product's calibration.

Circle No. 140 on Reader Service Card

VALUABLE INFORMATION to the heating and air conditioning industry is presented in two recent data sheets by Air Filter Institute, Washington, D. C. First publication is "Application of Electronic Air Cleaners". The second is titled, "Streaking and Smudging Around Air Outlets".

Circle No. 141 on Reader Service Card

PRODUCT BULLETIN announces new line of "Thrifty-Kool" 2, 3, and 5-hp low-side units available from Typhoon Air Conditioning Co., Brooklyn, N. Y. Salient electrical and mechanical characteristics are described, as well as their function with the accompanying air-cooled condensing units.

Circle No. 142 on Reader Service Card

HANDY PERFORMANCE CHART is one of the highlights of literature (NO. 34C7A) by Recold Corp., Los Angeles, on its "Dricon" air-cooled condenser line. Chart corrects ratings not only for variations in suction temperature, but also for those variations in condensing temperature. Specifications and dimensions also are presented.

Circle No. 143 on Reader Service Card

OVER 600 ITEMS manufactured by the company for the refrigeration and air conditioning field are shown in the new 24-page catalog issued by Madden Brass Products Co., Aurora, Ill. The catalog, designated as No. R-657, features such products as charging lines, hermetic port valves, and refrigerant dispensing kits, and also shows and describes flare fittings, strainers and driers, capillary tube, tube working tools and brass pipe fittings.

Circle No. 144 on Reader Service Card

DISTINCTIVE CHARACTERISTICS of centrifugal fan cooling towers are studied in 2-color Bulletin CF-600 published by Halstead & Mitchell, Pittsburgh, Pa. Literature discusses construction of the towers, including the wetted deck surface, water distribution, fans, motor, housing, and drive. Tables are devoted to sump capacities in gallons, operating and dimensional data and space requirements with weights per section.

Circle No. 145 on Reader Service Card

ECONOMICAL BENEFITS of waterless central air conditioning are emphasized in three-color brochure produced by Forston Co., Houston, Tex. Specifications are charted and pertinent illustrations describe various applications.

Circle No. 146 on Reader Service Card

FEATURES, FUNCTIONS, and advantages of an electronic system which provides economical control for any type of heating and air conditioning equipment are elaborated in Bulletin F 2287-4 from Barber-Colman Co., Rockford, Ill. Colored, four-page publication discusses components and accessories used in the various systems.

Circle No. 147 on Reader Service Card

(More Useful Literature on page 52)

Cool as a Cumulus



Quiet Beyond Belief!



d-h AIR CONDITIONING



Says: Jack Tullos, President Manager of the eye-filling new Shreveporter Highway Hotel...

- "Quite a saving in initial and operating costs!"
- "Periodic filter change our only maintenance."

Drayer-Hanson can cite similar case histories, world-wide: big jobs or small; new or old construction; residential, commercial, industrial...

Request SPOTAIRE literature



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DIVISION OF NATIONAL U.S. RADIATOR CORP.

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Circle No. 59 on Reader Service Card

5-SECOND APPLICATION!

FOR INSULATION ANCHORS and FASTENERS

Use **Stic-Klips®**



- No Surface Drilling
- Quick Fastening
- Strong Positive Bond

Stic-Klips® are time and labor saving fasteners for attaching insulation, strapping, metal lath wall fixtures, wiring and conduit to curved or flat, metal or masonry surfaces.

Application takes only seconds. All you do is apply a thin coat of Stic-Klip® adhesive to the base of a Stic-Klip® fastener with a putty knife. Apply another thin coat as primer base on porous surface area. Place Stic-Klip® fastener to primer base until adhesive fills holes. Clean off excess adhesive with putty knife.

Write for your application bulletins, Today!

Stic-Klip® MANUFACTURING CO.
54 Regent St. Cambridge 40, Mass.

Circle No. 60 on Reader Service Card
& AIR CONDITIONING • AUGUST, 1957

WHAT'S NEW

in Air Conditioning Equipment

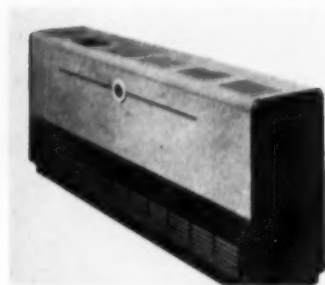
For further information on any of these products, simply circle on the postcard provided in this issue the key numbers of the items in which you are interested. Your request will be forwarded directly to the companies concerned.

(For more New Products turn to page 54)

Electric Unit Ventilator

Product: Electric unit ventilator especially designed for school classrooms.

Manufacturer: American Air Filter Co., Inc., Louisville, Ky.



Features: Uses electric heating coil. Eliminates many construction costs such as boilers, tunnels, stacks, and pumps. Consumes only from 1.3 to 30 kwh, depending on heat load. Can be installed as extensions to present establishments.

Circle No. 188 on Reader Service Card

Mounting Pad

Product: "Shear-Flex" mounting pads for reducing noise and isolating vibration transmitted from air conditioning equipment.



Manufacturer: Vibration Mountings, Inc., Corona, N. Y.

Features: Oil-resistant Neoprene sheet (18" square x 3/8" thick) with cross-ribbed structure. Offers deflection throughout full load range of 5 to 70 psi. Light loads ride on high ribs. Heavy loads are supported by entire ribbed surface. Recommended

loading is 50 psi, maximum impact load. Can be used in multiple layers with ribs crossing at right angles. Can be cut to size with scissors or knife and placed under equipment's legs or bearing plate. No need for bolting or cementing. Available in either carton of 10 sheets or in single sheets.

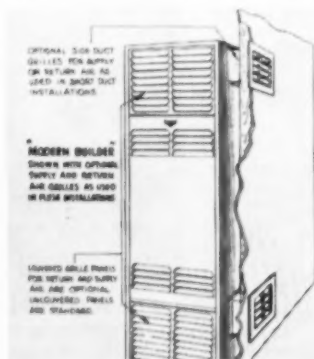
Circle No. 189 on Reader Service Card

Heating-Cooling Unit

Product: Single heating-cooling unit ("Modern Builder") which utilizes same casing, blower, warm air and return air ducts for heating and cooling.

Manufacturer: Heating & Air Conditioning Div., Stewart-Warner Corp., Chicago, Ill.

Features: At option of builder or eventual home owner, air conditioning may be installed as part of original installation or at later date.



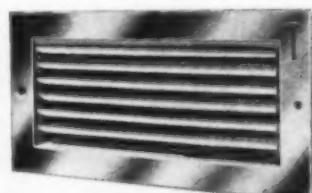
In either case, installation is the same and no changes, extra boxes, cases, or ducts will be needed. Available in counterflow and vertical models, gas and oil-fired, requires minimum of floor space (22 x 27"). Heating capacities of 67,000 to 80,000 Btu input and 2 and 3-hp cooling capacities. Gas-fired vertical up-flow and counterflow models readily are adaptable to natural, manufactured, liquid, or mixture of natural and liquid gas fuels. Built-in plenum

chamber is left vacant when installed as heating unit only. Cooling coil may be inserted at anytime without changing or altering original installation. Condensing unit may be placed outside living area and can be installed on ground close to house or suspended from rafters of carport. Refrigerant lines run from condensing unit to evaporator coil within installed unit removing vibration noises from home. Furnaces have warm air plenum incorporated as integral part of furnace for direct stub duct attachment. Draft hood is built-in, having front relief opening with flue connections on top of unit.

Circle No. 190 on Reader Service Card

New-Type Grille

Product: New-type grille ("Conver-Ti-Grille") specially designed to replace stamped registers



when converting warm air systems to add summer air conditioning.

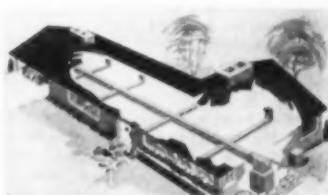
Manufacturer: Titus Mfg. Corp., Waterloo, Iowa.

Features: Provides correct air patterns necessary for both winter heating and summer cooling, and eliminates many expensive ductwork changes, manufacturer says. Built-in, single-valve damper operated from face of grille. Sponge rubber gasket assures air tight seal. Model DC-90 available in three standard sizes: 10 x 6", 12 x 6", and 14 x 6". Metalcote finish.

Circle No. 191 on Reader Service Card

Cooling Unit

Product: "Cool-Air" units for use in homes with or without existing furnace duct systems.



Manufacturer: Williamson Co., Cincinnati, Ohio.

Features: Of 1 1/2 and 1 3/4-hp capacity. Air-cooled condensing unit is located inconspicuously outdoors. In homes equipped with ducts and

forced air furnace, duct cooling and dehumidifying coil is installed directly in duct or above furnace. Duct may be that which supplies conditioned air to either entire home or to only that portion where cooling is desired. Cooling coil connected to outdoor condensing unit. Cooled air cleaned by furnace filters. In homes without ducts, may be installed with its own duct system to distribute air to either entire home or to selected area. Excess moisture is removed from air passing through cooling coils.

Circle No. 192 on Reader Service Card

Slender-Design Conditioner

Product: Slender-design air conditioning unit, (Vertical Remote-air).

Manufacturer: Plumbing & Heating Div., American-Standard, New York, N. Y.

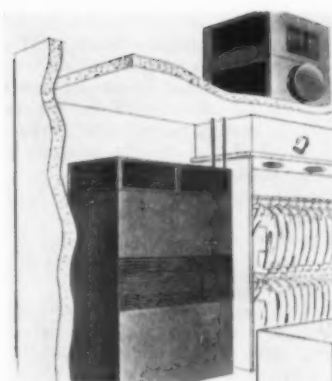


Features: Four sizes: 200, 300, 400, and 600. All have same 9" depth and only 25" high. Three practical models, free-standing, recessed, and recessed with adjustable fresh air intake, harmonize with any decor. Controls and electric conduit connections are on side opposite to piping connections for maximum installational convenience. Plate-fin coil slant-mounted to assure proper condensate drainage. Coil designed for 200 psi maximum working pressure. Fourteen-gauge steel primary drain pan has built-in $\frac{1}{4}$ " pitch toward two swaged drain holes for positive condensate disposal over smooth insulated surface. Glass fiber replacement filter can be removed without taking off front panel. Basic enclosure is insulated thoroughly to eliminate metal-to-metal contact between enclosure panels and coil assembly.

Circle No. 193 on Reader Service Card

Packaged Conditioner

Product: Expanded line of air-cooled, commercial air conditioners to include 10, 15, 20, 25, and 30-hp sizes.



Manufacturer: Airtemp Div., Chrysler Corp., Dayton, Ohio.

Features: Cabinets have same appearance as present water-cooled versions. Water-cooled condensers have been removed from condenser shell which will serve only as liquid receiver. Control panel has been modified for air-cooled condensing. Model 7005 has capacity of about five tons. Consists of condenser coils enclosed in bonderized steel cabinet; centrifugal blower; $\frac{1}{2}$ -hp, 115/230 volt, single phase blower motor, control box, terminal strip, pressure switch, thermostat, and damper. Model 7005-1 also with about five-ton capacity. Consists of con-

**Can Be Corrected
WITH
Acme Electric
Buck and Boost
Transformers**

Too frequently, air conditioning installations do not function properly; motors do not come up to speed, have no torque and windings burn out. This trouble can be traced to low-voltage. And, when motors run hot, insulation chars, windings burn out — look for a condition of excessive voltage. Distribution of power, complicated by inadequate wiring, circuit voltage drop and improper transformer ratios, often result in inadequate voltage supply or excessive voltage at the point of use. Plants and commercial buildings with well engineered wiring systems, report circuit voltages as low as 88 volts, and as high as 152 volts from which 115/120 volt single phase window air conditioners are intended to operate. No wonder so many service calls — so many motor failures. Check your voltage first, then correct to normal with an Acme Electric Buck and Boost transformer.

CORRECT THE VOLTAGE AT POINT OF USE

Compact, inexpensive, these voltage correcting transformers can increase or reduce the available voltage 10%, 13.32%, 20% or 26.64% on single phase circuits as low as 88 volts or as high as 152 volts.

BRING 208 VOLTS UP TO 230 VOLTS WITHOUT REWIRING

For large air conditioning units supplied with 230 volt motors and an available 208 volt source of supply, voltage correction can be made quickly, easily. Available for single phase or 3 phase.



ACME ELECTRIC CORPORATION
828 WATER ST. • CUBA, N. Y.



Write for Buck and Boost Transformer Catalog for complete specifications and data showing how to select the proper size transformer.

Circle No. 61 on Reader Service Card

denser coils mounted in bonderized cabinet and propeller-type, fan-driven by $\frac{1}{2}$ -hp, 230-volt, single-phase motor. Both condensers have same outside cabinet dimensions. Width $36\frac{5}{8}$ ", length $42\frac{1}{8}$ ", height 25". First model's condenser includes air damper. Auxiliary damper motor available for operation below 50-degrees ambient outside air temperature.

Circle No. 194 on Reader Service Card

Long Slot Diffuser

Product: "Line-Air", long slot diffuser.

Manufacturer: Universal Diffuser Corp., Tuckahoe, N. Y.



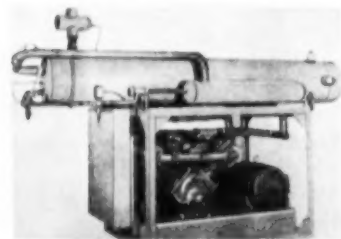
Features: Directs air into room at approximately 90 degrees to face of diffuser. Can be placed directly onto duct in very long continuous strips without requiring equalizing deflector blades. Air departing is broken up into counter-current jets, thus preventing stratification. Ideal for supplying warm air barrier on large window spaces. Prevents cold air from spilling to floor. Cold air is tempered through entrainment. Available in long lengths of varying widths.

Circle No. 195 on Reader Service Card

Packaged Water Chiller

Product: Line of packaged water chillers $7\frac{1}{2}$ through 75-h. Equipment designated D-H CWC.

Manufacturer: Drayer-Hanson, Los Angeles, Calif.



Features: Converts either hot water or steam system in existing structures to summer air conditioning. Utilizes existing piping to pipe through for air conditioning cycle. Factory shipped with insulated heat exchanger and chiller, across-the-line starters included. Also suction and discharge line vibration absorbers, oil pressure differential switch, thermal expansion valve, cycling thermostat, freeze-up prevention thermostat, charging valve, liquid line strainers,

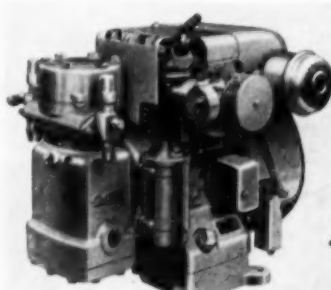
and sight glass, and condenser relief valve. Complete controls for safe operations. Optimum rate of heat transfer for condenser coils constructed of integral fin copper tubing, manufacturer says. Frame is of combination tube and angle iron construction.

Circle No. 196 on Reader Service Card

Engine-Compressor

Product: Line of engine-compressors for air conditioning or refrigeration applications where electric power is not readily available.

Manufacturer: D. W. Onan & Sons, Inc., Minneapolis, Minn.



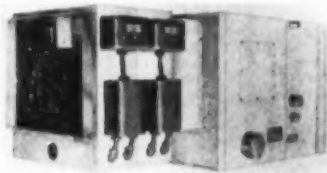
Features: Self-powered. Available in three sizes with capacities from 1 to 5 tons. Compressors directly connected to rugged, short-stroke, four-cycle, air-cooled engines. Compressors mounted directly to engine crankcases, eliminating alignment and belt tightening problems, couplings, drive belts, and pulleys. Hub for mounting condenser fan is provided on front end of engine crankshaft.

Circle No. 197 on Reader Service Card

Heat Pump

Product: "Magi-Temp" heat pump which reverses refrigeration circuit used for summer air conditioning.

Manufacturer: York-Shipley, Inc., York, Pa.



Features: Pumps heat from outside, instead of cooling. When outdoor temperature drops below practical limits for unit, auxiliary electric resistance heater coils, of 30 and 60-amp capacities, will cut in automatically, one after the other, as regulated by thermostat. In two sections. One section, installed in-

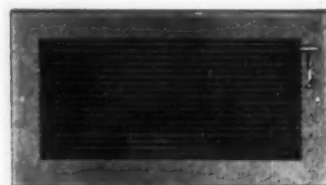
side home, includes motor-driven blower for air circulation, air filters, and evaporator coil, which cools during summer and heats when cycle is reversed. Housed in one cabinet, to which ducts are connected for circulation of cooled or heated air. Second section, installed outside, contains hermetically-sealed compressor, another motor-driven blower and condenser coil inside house. Pre-charged refrigerant lines with quick connect-disconnect fittings are furnished to connect two sections. Cooling capacities of 24,000, 33,000, and 62,000 Btuh.

Circle No. 198 on Reader Service Card

Damper Control

Product: Balancing lever damper control.

Manufacturer: Lima Register Co., Lima, Ohio.

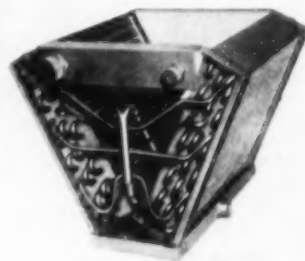


Features: Available for standard sizes of wall registers and side-wall diffusers. Easy balancing of heating system at register. Damper action regulated by lever stop laced in lever channel. Stop can be moved and positioned by adjusting set-screw in face of register. Easily set to proper balanced position. Damper closes tightly for positive air shut-off. Damper opens automatically to right degree for air volume desired.

Circle No. 199 on Reader Service Card

Low Side Units

Product: Line of lowside units, designed and engineered especially for economic installation.



Manufacturer: Typhoon Air Conditioning Co., Div. of Hupp Corp., Brooklyn, N. Y.

Features: Built to accompany 2, 3, and 5-hp "Thrifty-Kool" TAR

air-cooled condensing units, TEU and TEH models readily lend themselves to application to existing warm air handling systems. TAR plus TEU upflow V-type evaporator coil (shown), and furnace blower, yield year-round comfort system. TAR and TEH horizontal, air-flow, flat-type, evaporator coil also provide 2, 3, and 5-hp system, when combined with existing furnace blower. When air handling system is not available, air handling blower (Model TAH) may be used to complete system made up of TAR air-cooled condensing unit and matching TEH. Factory-charged tubing kit connects TAR, pre-charged condensing unit, with evaporator coils without loss of Freon and without air inclusion, and provides self-sealing coupling, manufacturer says.

Circle No. 200 on Reader Service Card

Packaged Air Conditioner

Product: Redesigned line of packaged air conditioners for commercial and industrial application.

Manufacturer: U. S. Air Conditioning Corp., Philadelphia, Pa.

Features: Included in line are 3, 5, 7½, and 10-hp, single-circuit models; and dual-circuit 15 and 20-hp units. Three connections put units in operation. Rotatable blower can be rotated in field from standard



vertical discharge to horizontal discharge—through removable panel in rear. Eliminates 90-degree turn in ducts from blower outlet for horizontal discharge. Hermetic and semi-hermetic compressors are installed on vibration mounts and operated with Refrigerant 22. Compressor section is insulated and isolated from rest of unit by means of condensate pan. Entire air discharge area is insulated with glass fiber. Fan housings have welded seam construction. Wheels are balanced statically and dynamically. Cut-off valve converts models from water-cooled to air-cooled. All piping connections are above insulated condensate pan and are accessible for easy installation.

Eliminates possibility of water or condensate draining into motor compressor section or on floor.

Circle No. 201 on Reader Service Card

Portable Air Conditioner

Product: Featherweight 75, portable, plug-in room air conditioner.

Manufacturer: Whirlpool Corp., St. Joseph, Mich.

Features: Weighs only 90 lbs. Easily moved from window to window. Cooling system with ¾-hp compressor motor is rated at 6,000 Btuh. Operation is on 115 volts with cur-

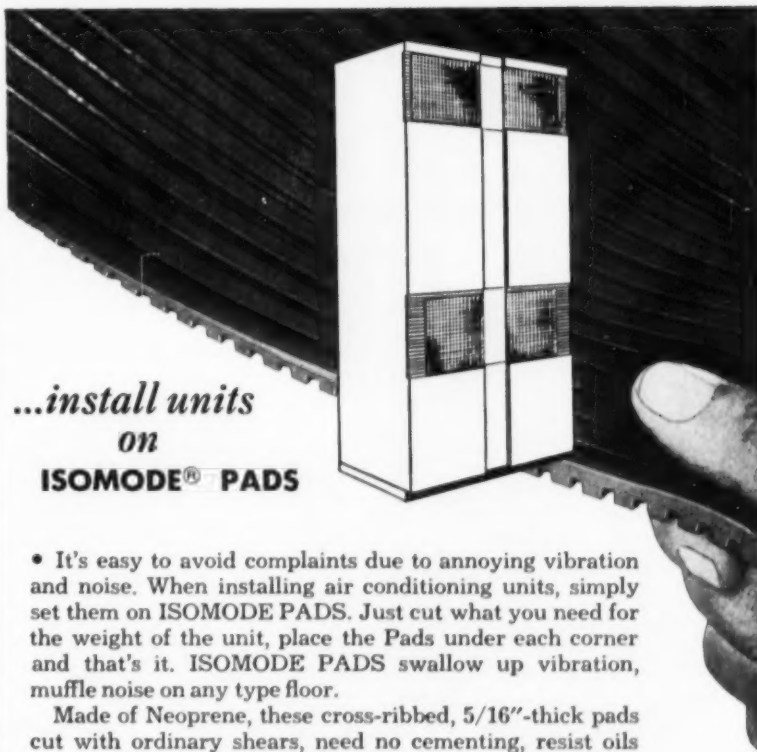
rent draw of 7.5 amps. Only 21" wide, 14" high, and 14" deep. Kit for flush mounting is provided. Single rotary control. Adjustable grill. Built-in thermostat and thermal overload protector. Aluminum cabinet finished with two coats of baked-on aqua green enamel. Aluminum front panel is frost blue with white accents.

Circle No. 202 on Reader Service Card

Air Dryer

Product: Model AO9A, small-size, air dryer.

Easy way to control noise and vibration



...install units
on
ISOMODE® PADS

• It's easy to avoid complaints due to annoying vibration and noise. When installing air conditioning units, simply set them on ISOMODE PADS. Just cut what you need for the weight of the unit, place the Pads under each corner and that's it. ISOMODE PADS swallow up vibration, muffle noise on any type floor.

Made of Neoprene, these cross-ribbed, 5/16"-thick pads cut with ordinary shears, need no cementing, resist oils and water, last for years. One standard economy package of ten 18" x 18" ISOMODE PADS gives you enough for mounting 160,000 pounds of equipment. Write for prices and detailed Bulletin No. 415.

MB manufacturing company

A Division of Textron Inc.

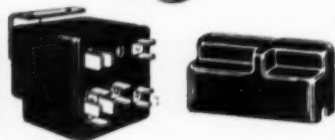
1065 State Street, New Haven, Conn.

HEADQUARTERS FOR PRODUCTS TO ISOLATE VIBRATION . . . TO EXCITE IT . . . TO MEASURE IT

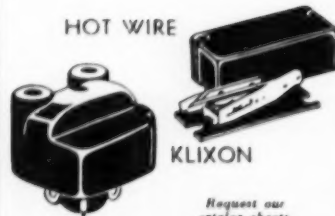
Circle No. 62 on Reader Service Card

Refrigeration and Air Conditioning RELAYS

GENERAL  ELECTRIC



HOT WIRE



KLAXON

Request our catalog sheets.

Your Relay Source...

SAM HAMMER INC.

698 WASHINGTON AVENUE
BROOKLYN 38, NEW YORK
SOLD ONLY THRU JOBBERS

Manufacturer: Bryant Mfg. Co., Indianapolis, Ind.

Features: Valuable where delicate electronic equipment is made or used in storage facilities or laboratories where vapor, frosting, or icing



are problems. Delivers 150 cfm. Can be installed multiple in large spaces. Occupies slightly less than same space of ordinary card table and is but 17" high. Electric current required is 230-volt, three-wire power supply, with straight 115-volt optional for domestic use. Duckwork in inside installation is simple exhaust vent. Discharge and return ducts needed for outside installation. Physical adsorption removes moisture. Constantly revolving drum of silica gel desiccant draws moisture from air. While one area of desiccant

adsorbs moisture, another area is being heated to drive unwanted moisture out—reactivating desiccant for continued use. Heat obtained from tubular resistance heater. Humidistat automatically controls amount of moisture pulled from air. Circle No. 203 on Reader Service Card

Air-Handling Unit

Product: Model 580, factory-assembled, air-handling unit.

Manufacturer: Recold Corp., Los Angeles, Calif.

Features: In three styles: UV-580, vertical draw through unit; UH-580, horizontal draw through unit; and MZH, blow through unit with individual zones. Last named has large air discharge plenum area with air diffuser spreader plates for better air distribution over coil. Damper discharge can be either horizontal or vertical and may handle up to 14 zones. Both UV and UH 580 models are built around heavy reinforced angle iron frames and are enclosed with exclusive panel locking feature.

Circle No. 204 on Reader Service Card

Self-Contained Systems

Product: Two full lines of "Fresh'nd-Aire" residential and com-

REMOVE CONDENSATE WATER FROM AIR CONDITIONING SYSTEMS



A completely automatic, foolproof unit designed to remove hot or cold condensate fluids from the receiver tank and pump it to an outside drain. Simple to install with air conditioning equipment, it gives quiet and reliable performance.

Eastern Model 3, Type 100:

Tank capacity 0.8 gallon. Centrifugal pump delivery approximately 4½ GPM at 0 P.S.I. and shut off of 12½ P.S.I. Motor 1/40 H.P., 115 volt. Weight 23 pounds. Mercury control switch. Size 5½ inches wide, 10 inches long, 11¾ inches high.

EASTERN INDUSTRIES, INCORPORATED
100 SKIFF STREET, HAMDEN, CONN.

Typical Uses:



DRAIN ABOVE EQUIPMENT



EQUIPMENT AWAY FROM DRAIN



DRAIN TO OUTSIDE DROP



CONDENSATE FLUID PUMPED BACK INTO EQUIPMENT

Circle No. 63 on Reader Service Card



MONEY TALKS . . . BUT NOT AS LOUD AS OUR CHIEF BUYER WHEN IT COMES TO QUALITY COMPONENTS!

All our vendors know that when they are dealing with Jerry Clark, our Purchasing Agent, there are no short cuts on quality.

Obviously, as with all buyers, Jerry is seriously concerned with price. Delivery is another vital consideration. "But," says Jerry, "I'd be sticking my neck out a mile with top management if I sacrificed quality in favor of a break in either price or delivery." Jerry is right. When we entered the air conditioning and refrigeration compressor business, we knew that we would have to have something better in our product line to offer at a competitive price and be able to guarantee its dependability.

Here at the Evansville Division we believe we've done just that, and reports from manufacturers who are now using our compressors prove that we're right.

Of course, sound, intelligent purchasing of reliable components is just one of the many ways we assure built-in dependability in every Bendix-Westinghouse compressor. We'd welcome the opportunity to tell you about all the others.

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EVANSVILLE DIVISION of

Bendix-Westinghouse

Automotive Air Brake Company

Circle No. 65 on Reader Service Card

mercial self-contained air conditioning systems.

Manufacturer: Cory Corp., Chicago, Ill.

Features: Air-cooled, self-contained residential units in 2 and 4 hp. Water-cooled residential packaged series comes in 2, 3, and 5-hp units for add-on installation in homes. Whether-proofed exterior condensing cabinet and interior cooling coil and blower housing.

Circle No. 205 on Reader Service Card

Summer Conditioners

Product: Line of summer air conditioners.



Manufacturer: Thatcher Furnace Co., Garwood, N. J.

Features: Self-contained, water-cooled unit available in models from five through 15 tons. Includes both cooling and blower equipment in single cabinet. Horizontal and vertical louvers provide full control of air distribution and throw. Easily serviced in field. Another unit in line can be added easily to existing warm air systems in residential or commercial installations where water is scarce or expensive. Made in 2, 3, and 5-ton capacities. Small, air-cooled condensing unit can be placed in yard, cellar, or garage. Evaporators with quick connect valves are made for either horizontal or vertical air flow and are designed for simple, connection to ductwork. Water-cooled model can be installed either with ductwork or as free standing package unit for commercial applications. In 2, 3, and 5-ton capacities, has knock-out plugs which eliminate drilling for water, drain, and power supply connection. Replaceable filter. Coaxial-type condenser. Centrifugal blower with large diameter wheel.

Circle No. 206 on Reader Service Card

BUY FROM YOUR
REFRIGERATION WHOLESALER

Water-Cooled Conditioner

Product: Line ("Consolaires") water-cooled room air conditioners.



Manufacturer: Remington Corp., Auburn, N.Y.

Features: Models 10A62, 10A43, and 15A43 in 1-hp (12 amps.) for 115-50/60-1; 1-hp deluxe for 230-50/60-1; and 1½-hp deluxe for 230-50/60-1. Conversion packages are available to adapt 230-volt models for 208 or 250-volt service; 1-hp models have rated capacity of 11,300 Btuh; 1½-hp model is 16,600 Btuh. Dimensions are same for all

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refrigerant compressor. York Oil keeps compressors free of carbon on valves and gummy deposits on piston rings. It is chemically stable, bone dry, won't break down.

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Or write for further information: LINDE COMPANY, Division of Union Carbide Corporation, 30 East 42nd Street, New York 17, N. Y. In Canada: Linde Company, Division of Union Carbide Canada Limited, Toronto.

The terms "Linde" and "Prest-O-Lite" are registered trade-marks of Union Carbide Corporation.

Circle No. 69 on Reader Service Card

models: 36 x 30 x 13". Three cabinet enclosures are offered: mahogany in traditional finish; mahogany in blond finish; and furniture steel in chestnut brown baked enamel. Water consumption for 1 and 1½-hp sizes is 70 and 100 gph. Central water-cooling tower recommended for multiple installations.

Circle No. 207 on Reader Service Card

Changeover Thermostat

Product: Heating-cooling thermostat which acts quickly when changeover is made.

Manufacturer: Powers Regulator Co., Skokie, Ill.

Features: Relay and flapper valve make it impossible for action to linger "in between" when supply pressure is changed. Used with pneumatically-controlled air conditioning systems. For heating cycle, operates on 22 psi supply pressure. Supply pressure is 15 psi for cooling. Relay and flapper valve changes control action as supply pressure is changed. Single-ball, double-seat air valve mechanism provides 100% larger air capacity for fast repositioning of control valves or dampers without using amplifying relays, manufacturer says. Valve mechanism also prevents constant air waste. Manual screw adjustment provides for as much as 6 F differential be-

tween summer cooling and winter heating control point. Flexible neoprene connecting tubes between



thermostat chassis and terminal block enables mounting screws to be tightened without affecting thermostat calibrations.

Circle No. 208 on Reader Service Card

Belt-Driven Condenser

Product: Belt-driven fan models BFC added to line of "Zephyrcon" air-cooled condensers.

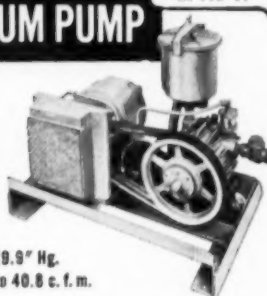
Manufacturer: Larkin Coils, Inc., Atlanta, Ga.

Features: In 5, 8, 10, 15, and 20-ton capacities. Operate at lowest possible noise levels, manufacturer says. Engineered for parallel use to provide adequate capacity for

New! LEIMAN Air-cooled VACUUM PUMP

Eliminates
watercooling
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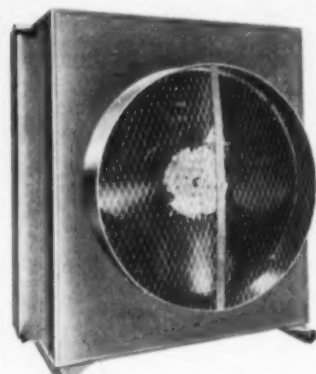
Revolutionary radiator air-cooled lubricating system provides this rotary pump with higher capacity in smaller space—reduces heat and wear—improves volumetric efficiency. Runs 24 hours a day without overheating. Uses no water or piping—can be moved to any spot. Incorporates Leiman "lifetime" 2-wing pump that takes up its own wear—never gives trouble—lasts for years.

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Air Pumps since 1887

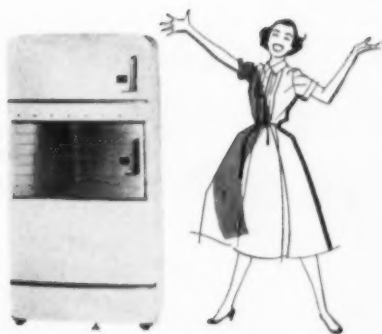
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Vacuums up to
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Capacities
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virtually any air conditioning or refrigeration system. Multiple circuits are available at no extra cost. Motors are of standard NEMA drip-proof design, mounted on adjustable base. Oil-impregnated, bronze sleeve bearings are provided with oil fittings. Motors are provided with overload protection and are located inside casing. Cross-fin coil with aluminum fins and staggered copper tubes. Heavy-gauge steel casing. Weather-proof conduit box and fan guards.

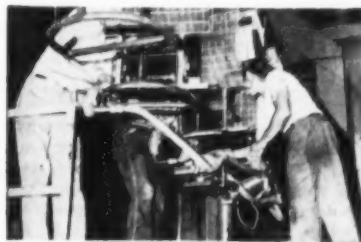
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After brazing, the assembly undergoes the first of four leak tests in a water-filled tank. It is then given a carefully controlled dehydration and vacuum test.



To further insure that the vacuum is maintained, the assemblies enter a helium atmosphere; the smallest leak would draw helium into the system.



Next they are tested by the spectrometer which is calibrated to detect a concentration of helium equivalent to a leak rate of one ounce of refrigerant in 200 years.

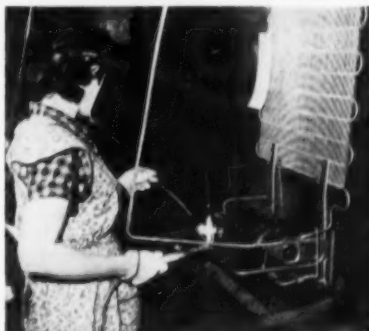
How to Join Refrigerator Tubing So It Won't Leak

Hotpoint Company's new refrigerator assembly plant in Chicago boasts one of the most advanced mass-production assembly line operations in the industry. It boasts, also, one of the most stringent quality controls in the industry—with 83 quality checks and tests during manufacturing. Four of these tests are positive checks for hermetic sealing, the most exacting being the mass spectrometer test which can detect a potential leak of one ounce of refrigerant in 200 years.

To a great degree, hermetic sealing depends on the quality of the joints in the tubing connecting the major components of the system . . . Hotpoint's are silver brazed with Handy & Harman's EASY-FLO 45 and HANDY FLUX. Some of these joints are copper-to-copper, others copper-to-steel and the rest steel-to-steel; all are EASY-FLO brazed and have a tensile strength of 30,000 psi.

These gruelling production checks are met, basically, with a 3/64" silver alloy wire, double-tipped hand torches fueled by a mixture of natural gas and oxygen, and HANDY FLUX. These are the ingredients of EASY-FLO brazing used by Hotpoint in assembling their refrigeration units. Simple, isn't it? And all the more remarkable in view of the tests the brazed joints must pass.

A joining method this simple, this fast, this economical and this strong warrants your consideration for your product. Ask us for all the facts,



SEND FOR BULLETIN 20

BULLETIN 20 tells you why high strength, speed and economy are inherent in EASY-FLO brazing. Also gives Handy information about joint design and fast brazing methods. We'll be pleased to send you a copy.



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Brook Motors are available from warehouse at Chicago, Dallas, Jersey City, Los Angeles, Memphis, St. Paul, Salt Lake City, San Francisco, Atlanta, Seattle, Tampa and other major distributing points.

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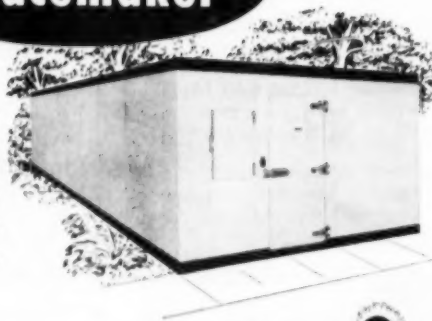
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Circle No. 73 on Reader Service Card

It's the LAW!

by Albert Woodruff Gray

Legal problems are an inherent part of operating any business enterprise. If you are beset by them, you'd better talk to your lawyer. This column, which appears periodically in the issues of **COMMERCIAL REFRIGERATION AND AIR CONDITIONING**, in no way aspires to serve as legal counsel for our readers. It is prepared, however, by a man well versed in legal practices and opinions, and by presenting digests of actual court cases involving commercial refrigeration and air conditioning dealers and contractors we hope to enable our readers to sidestep some of the legal pitfalls into which they otherwise might unwittingly stumble.

—The Editors

MEASURE OF DAMAGES

REFRIGERATING equipment purchased by an ice manufacturer in Huntsville, Alabama, was installed in his plant in the early fall. During the winter months it functioned satisfactorily, maintaining the desired 28 F temperature. Eight months later, when the outside temperature had risen to 85 F and higher, the ice in the storage room melted and the owner notified the seller of the defect.

When adjustments and increased insulation failed to remedy the fault, the plant owner installed an additional unit. In the suit brought by this owner against the seller, damages were claimed as a consequence of the fraudulent misrepresentations made by the seller.

In a summary of the measure of the damages which the purchaser was entitled to recover the court held that this measure in actions for fraud was the difference between the value of the article furnished and the value it would have had had it been as represented by the seller.

That rule, however, the court added, does not preclude additional damages for losses that were within the contemplation of the parties which were the natural and proximate consequences of the misrepresentations. "Where property is sold for a particular purpose and the seller misrepresents its fitness for such purpose he is liable for all damages proximately caused by its unfitness for the purpose."

Within this rule, according to that court, are the expenses incurred in efforts to minimize the losses as well as amounts spent for service charges, insulating material, and the auxiliary refrigeration unit as well as damages for loss of ice, the replacement cost of ice that had been destroyed and the expense incident to such replacement.

Bayliss Machine & Welding Co. v. Huntsville Ice & Coal Co., 91 So. 2d 483, Alabama, January 12, 1956.

DEALER HELD LIABLE FOR FALSE STATEMENTS

TO the purchaser of a used refrigerator for a meat market the seller gave assurance that the unit was as good as new and would give adequate refrigeration for the preservation of meat. This statement was untrue and the purchaser sued for damages. In this defense the seller contended that these statements were merely opinion and not the statement of as past or existing fact on which the buyer could base this charge of fraud.

"We think the contention cannot be sustained," said the court. "The essence of the affirmation was that the machine was capable of reducing the temperature to a point low enough to keep meat from spoiling. It was more than a prediction or expression of opinion. It was a statement respecting the inherent capacity or power of the machine."

"Such a statement is one of existing fact and if made with knowledge of its falsity and with intent to deceive the person to whom it is made, amounts to actionable fraud, if such person relied upon and was actually deceived by it."

Schmitt v. Ornes Esswein & Co., 183 N.W. 841, Minnesota.

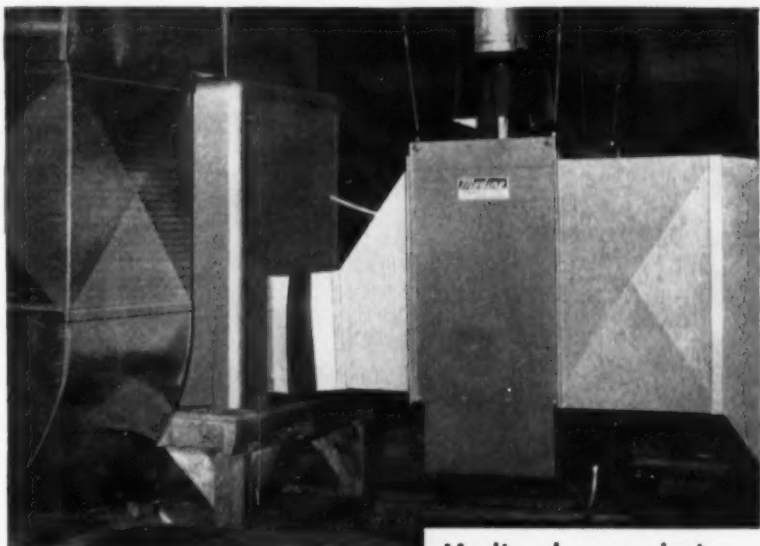
COURT VOIDS PAYMENT OF ANOTHER'S DEBT

PURCHASERS were sued for the services of a contractor in the installation of refrigeration equipment in California. Under the contract it had been agreed that the price to be paid by the purchasers included installation.

When the contractor failed to receive payment from the dealer for his services in this installation he had sued the purchasers. The judgment recovered by the contractor was paid and the purchasers then sued the dealer under their contract. From the judgment which they recovered in this action the dealer appealed. In its affirmation the California court said.

"One who is compelled to pay a debt or whose property is made liable for a debt which another in good conscience ought to pay, is entitled to recover against that other the amount so paid. The soundness of this doctrine has been upheld by innumerable decisions of courts of the highest

Never rusts or corrodes, offers amazing installation flexibility



Modine stainless steel gas-fired duct furnace

This versatile furnace is especially suitable for use with cooling coils and packaged air conditioners. Stainless steel burners and heat exchangers prevent the rust and corrosion problems of conventional units. What's more, compactness and light weight allow easy, low-cost shipping and installation.

Check these Modine PLUS features

Fast, uniform heat is assured by direct firing of each seam-welded, gas-tight heat exchanger tube.

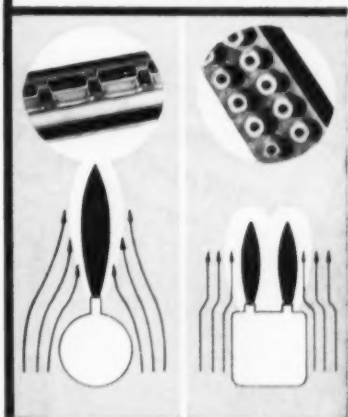
Convenient controls are mounted on side of unit for easy access regardless of furnace location.

Removable burner permits easy inspection and maintenance.

Five sizes are available from 88,000 to 213,000 Btu/hr input.

Wide application — Ideal as central heaters . . . boosters . . . with air conditioners . . . and for industrial and agricultural drying, processing and ventilating.

Modine burner design prevents clogging . . . assures clean burning



Modine Ports

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Modine ports have four times the free area of drilled ports. Sharp edges resist lodging of scale, and single-row arrangement assures maximum combustion efficiency.



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For safe, positive algae control.
Destroys all algae and organic
matter in cooling towers and spray
ponds. Sanitizes, sterilizes, and de-
odorizes water-cooled systems.

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authority in many jurisdictions, and it is so obviously just and reasonable that it is a matter of wonder that it should ever have been called into question.

"It is not necessary that the pay-
ment should have been coerced by
actual legal proceedings. The mere ex-
istence of the legal liability is suf-
ficient."

Battini v. Hoffman, 305 Pac. 2d 84,
California, December 28, 1956.

**LOCKER PLANT DOORS
USED AS SECURITY**

INSULATED cold storage doors
were installed in a locker plant in
Missouri and a chattel mortgage on
the doors given as security for a loan
of \$5,000. When the owners of this
plant failed to make payments on
either the chattel mortgage or the
rent to the landlord, the mortgagee
attempted to take possession of the
doors.

While it was doing so the doors
were seized by the sheriff in an action
by the landlord for the unpaid rent.
Suit was brought by the mortgagee
against the landlord in which it con-
tended that it and not the landlord
owned these doors. In its decision
that these doors were a part of the
building itself and could not be re-
moved by the mortgagee under his
mortgage the court said,

"Articles annexed to realty by a
tenant for the purpose of carrying on
a trade or business are considered as
trade fixtures and are ordinarily re-
movable by him. That the fixture is
particularly adapted to a particular
type of building does not in itself
make it irremovable.

"If the article is placed in the build-
ing for the sole purpose of enabling
the tenant to carry on his business,
it is removable. But if the article is
so placed as to make the building it-
self peculiarly adapted and more us-
able for the type of business, then it
is not removable."

Stockton v. Tester, 273 S.W.2d 783,
Missouri.

**HUGHES-KEENAN CORP.,
USAIRCO IN MERGER**

Merger of Hughes-Keenan Corp.
of Delaware, Ohio into the United
States Air Conditioning Corp. of
Philadelphia, and retention of the
latter name, has been announced
by Glen Way who becomes presi-
dent and chairman of the execu-
tive committee of Usairco.

The merger was approved re-
cently at a special meeting of
Usairco stockholders at the cor-
poration offices in Wilmington,
Delaware.

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FIRST AND FINEST IN ICE MACHINES!



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to Sell!**



**Models for Every
Prospect,
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**Scotsman Dealers
Are Making
More Money!**



**Cash in with
Scotsman, the
Industry Leader!**



**Send in the Coupon
Your Ticket to
Profits!**



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Super Cubers



Super Flakers



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dealer franchise for Scotsman Ice Machines.**

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CITY ZONE STATE

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198 Front Street, Albert Lea, Minnesota

SPECIALIZE . . .

Continued from page 67

Mart supplying the entire system, including pumps and matching cooling towers.

For an example of how a typical installation made by the company sets up, let's review the one in the Kimo theater, a 515-seat house, with an auditorium measuring 40' x 70'.

Three packaged units were used in this job, for a total capacity of 32½ tons. One 15-ton unit and one 10-ton unit were installed behind the screen, and a 7½-ton unit was placed in the foyer in the center of the rear auditorium wall. An overhead duct carries the cooled air into the lobby.

The behind-screen units are located one on each side of the stage, with air ducts leading to new air grilles installed just above the old grilles for the washed-air system. Existing gas heating equipment, installed just a couple of years before the cooling equipment was put in, was retained, and one of the old grilles is used for heating, the other left in place just for looks. The fans of the air conditioners are used to distribute both cooled and heated air.

Sound Level Is Critical

Ductwork of the air conditioning system is lined with insulation for about 10' from each unit. Rubber isolation bases are spotted between the cooling tower, air conditioning units and building to eliminate noise and vibration. This is a most important factor in theater jobs, Lindeman points out, as the sound levels of the equipment must be lower than the theater sound level.

Placing the air conditioning equipment behind the theater screen, and taking extra precautions to eliminate all possible sources of equipment noise and vibration, is a major step toward a satisfactory installation in the theater field, Lindeman says. The theater's own sound system is generally located behind the screen, and the speaker drowns out any slight noise that customers might otherwise notice from the air conditioning units.

Another important factor in installing air conditioning in existing theaters is the necessity of concealing all pipe and duct work inside the building, so that addition of the system doesn't detract from the appearance of the interior. In many cases, where a minimum of ducting is required, it is possible to conceal it all behind the stage and the lobby wall and ceiling. In other cases, where air conditioning is part of an interior "face-lifting" job, a false ceiling is involved and pipe and ducts can be run through the space created in this way.

It's a good idea, from a psychological standpoint, to arrange one of the air conditioning units so the patron will know, right when he comes in the door, that he's in an air conditioned house. One of the units generally is located near the front of the theater, and Air Mart's practice has been to leave this unit in view so customers can see it — and duct it so that the cold air hits them as soon as they're inside.

The company handles the complete job for the theater operator, from planning, designing, and installation, right through to financing. In this way, it can go to the prospect with a complete proposition; once the prospect is sold, he has only one company to deal with.

Air Mart has found that, in many small theaters, equipment size requirements can be reduced

by careful planning. Theaters in the smaller towns are open only a few hours a day; and by starting up the system an hour or so before the performance is to start, a pre-cooling job can be accomplished that enables a smaller system to operate more satisfactorily than if the equipment was not cut in until the box office opened.

Follow-Up Is Important

The company follows up its interest in the theater field with participation in theater shows and exhibits throughout the Missouri-Kansas area. At a recent exhibitors' show, Air Mart had a booth, and distributed specially prepared circulars to visitors. The company also advertises regularly in Box-office Magazine, a regional publication going to theater operators in the Missouri-Kansas area.

From its experience in the small theater field, Air Mart believes that in specialization it has found a way to increased sales and full profits by making itself expert in one particular industry's problems and needs. Now, there are one or two other fields on which the company is working — bowling alleys, for instance — but the formula will be the same:

Study the field, learn its peculiar problems and how to solve them — and then go out and sell.

**BUY FROM YOUR
REFRIGERATION WHOLESALER**

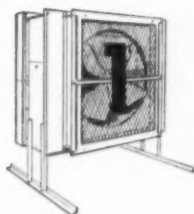


FIRST SERVICE COURSE offered at the new American Blower Corp. air conditioning training school was filled by representatives of Hajoca Corp., Philadelphia, shown here at work during the course. The school is located in American Blower's main plant in Dearborn, Mich. Admission is by application to the company (Detroit 32, Mich.), and registrants need not be representatives of an American Blower distributor or dealer to qualify for acceptance. Complete equipment and shop facilities are provided. Instructor for the school is Kenneth Russell.

ONLY KRAMER UNICON + WINTERSTAT* GUARANTEES ALL

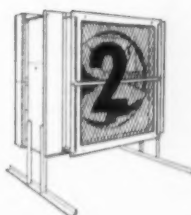
4

MAXIMUM LIQUID PRESSURE AT EXPANSION VALVE IN WINTERTIME



Only the Kramer UNICON plus WINTERSTAT guarantees the full refrigerant pressure at the expansion valve for full cooling capacity — even at below 0°F outdoors — automatically!

MAXIMUM SUMMER CAPACITY WITH PATENTED WINTERSTAT



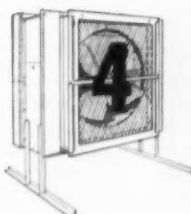
Only Kramer UNICON plus WINTERSTAT guarantees maximum condensing capacity in summer. In hot weather, the patented WINTERSTAT is out of the refrigerant circuit, permitting normal drainage from the condenser without restriction. This assures maximum condensing capacity in summer — automatically!

PROMPT DEFROSTING AT ANY OUTDOOR TEMPERATURE



The use of UNICON plus WINTERSTAT makes Kramer THERMOBANK the only low temperature system that can guarantee operation and complete defrosting at any outdoor temperature—even 0°F or lower — automatically!

IMMEDIATE COMPRESSOR START-UP REGARDLESS OF OUTDOOR WINTER TEMPERATURE



Only Kramer UNICON plus WINTERSTAT (using modification #1) ensures positive and immediate compressor start-up with pressurestat operating the system, regardless of outdoor winter temperatures at the UNICON and regardless of length of compressor lay-off — automatically!

*UNICON is a remote type air-cooled condenser WINTERSTAT is a year 'round automatic head pressure control
WRITE FOR BULLETIN U-210-L

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The Commercial Refrigeration & Air Conditioning

APPLICATIONS MANUAL

Commercial Refrigeration Applications Hold Pitfalls For Engineers Trained Only in Air Conditioning

by Hugo C. Smith

MANY graduate engineers today find themselves in the dual position of handling both air conditioning and refrigeration applications. In many instances their main business is air conditioning and only an occasional refrigeration job is done.

Inasmuch as most of today's graduate engineers are trained primarily in air conditioning practices, they may easily get into serious trouble by applying air conditioning principles and practices to even the most conventional commercial refrigeration application. It is the purpose of this article to try to point out some of the basic engineering differences between the air conditioning and commercial refrigeration business.

In estimating a refrigeration job, the air conditioning engineer will find himself dealing with product loads for the first time. These product loads will require a very detailed and careful analysis.

Time of Day Considered

The time of day a product arrives at the cold storage location, its quantity, its weight, and its temperature on arrival, all are definite factors to consider.

The temperature at time of arrival is particularly important and should be personally checked by the application engineer. The quantity of product and its arrival temperature should also be mentioned in the proposal to the customer. Strange things can happen to these conditions which are in no way the fault of the applications engineer but which can mean a complete job failure.

Foods normally move from long term storage warehouses or from refrigerated cars and trucks to the wholesalers' storage coolers. From there the foods move to retail storage coolers.

Several years ago we experienced a situation in which a customer who operated a wholesale produce business complained that his cooler was not handling the product load properly, as evidenced by high temperatures after product loading.

Upon investigation, we found that the job originally had been engineered on the basis of produce arriving at the cooler from a nearby cold storage warehouse at a temperature of 45 F. Consequently, equipment had been installed to adequately handle this load.



However, between the time the job was engineered and installed and the time of the customer's complaint, the wholesaler's methods of operation had changed so that he was now loading a major part of his produce direct from refrigerated trucks which were hauling it from the farmers' fields some 200 miles distant. The produce was in the trucks for too short a time to be properly chilled. As a result, it was now arriving at the wholesaler's cooler at a temperature of 75 F, instead of 45 F. Naturally this caused the customer's refrigeration system to be

overloaded, and resulted in the complaint.

It is important, from the engineering standpoint, that good ordinary common sense be used in establishing a standard of product loading which has a reasonable relationship to the overall capacity of the space being refrigerated.

Many times, for instance, an engineer may be asked to figure a ridiculously low product load for a comparatively large cooler. Although the customer may insist that the present method of loading the cooler will not change, it has been our experience — particularly with wholesalers of perishable foods — that methods of transportation, sources of supply, and practically all other factors of the business are constantly changing.

Plan for Partial Loads

Therefore, if a cooler is capable of holding 10 tons of a given product, common sense will tell us that there will be times when at least a third of that capacity, or $3\frac{1}{3}$ tons, will be loaded in one day. If the application engineer doesn't insist on planning for that eventuality, sooner or later he will have a dissatisfied customer on his hands complaining about lack of refrigerating capacity.

The next basic difference that will be encountered by a man who is primarily an air conditioning engineer in selecting equipment for a commercial refrigeration application is that refrigeration equipment normally is selected on a basis of 16 to 18 hours of compressor operation, rather than the 24-hour operation common for air conditioning equipment. This provides enough "off" time to allow the coils to defrost.

The total load, therefore, is divided by the number of hours of operation in order to determine the needed compressor capacity in Btuh. This, of course, results in a larger compressor than would be required if operation were to be figured on a 24-hour basis.

In selecting the actual equipment for commercial refrigeration applications, engineer trained in air conditioning procedures and practices will notice a marked difference in between coils to compressor.

In air conditioning, temperature differences between coils and room air are markedly higher than in refrigeration. In most refrigeration jobs requiring high humidity, coils are selected on a 10-degree temperature difference between coil temperature and final room temperature. This, of course, requires a coil much

REMOVE THE SCALE... SAVE THE EQUIPMENT!

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is pronounced safest for use on dip zinc coated,
galvanized and aluminum water-cooled equipment



**LOOK FOR THIS
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Every drum of new "Virginia" solid scale remover bears the seal of safety which relieves you of worry about equipment injury. Use "Virginia" to restore peak heat-transfer efficiency of your water-cooled equipment—quickly, economically. Avoid costly shutdowns—eliminate the personal hazards of handling corrosive liquids. *Insist on the new, improved "Virginia" formula with the seal of safety atop the drums.* Packed in 10 and 50-lb. drums.



STOP SCALE FORMATION with "Virginia" Water Treatment and Corrosion Inhibitor. Holds scale-forming solids in suspension or solution, greatly reducing scale buildup on metal surfaces; protects against corrosion. Packed in 6 and 50-lb. containers.

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Order these field-tested products from your wholesaler or write **REFRIGERATION DIVISION, Virginia Smelting Co., 278 Jefferson St., West Norfolk, Va.**



ESOTOOL•KINETIC CHEMICAL'S "TREDON" REFRIGERANTS•V METH-I
CAN-G-GAS • PERMAGUM • PRESSTITE TAPE • KWIKWRAP
SUNISO REFRIGERATION OILS • WATER TREATMENT CHEMICALS
Available in Canada and many other countries

greater in capacity than the air conditioning engineer is accustomed to using.

It must be remembered that most refrigeration applications must maintain approximately 80% humidity, in order to prevent extreme desiccation of the product. Most air conditioning applications, by comparison, strive for a relative humidity of approximately 50%. So if the final refrigeration equipment selection shows a coil about three times larger than the air conditioning engineer normally would use, he need not be alarmed — he's probably on the right track.

Also, it must always be remembered that the basic fundamental difference between commercial refrigeration and air conditioning systems is that in the latter the gas circulates about three times faster than it does in refrigeration. Coil resistance, therefore, must be vastly greater in refrigeration than in air conditioning.

Extreme differences also will be noted in relative quantities of air per ton of refrigeration. In air conditioning the average package unit is based on 400 cfm per ton. Many applications require even less air per ton than this. By contrast, in refrigeration applications where personnel comfort is not a consideration, normal air quantities handled are approximately 2000 cfm per ton, if coils have been selected on the basis of 10-degree t.d.

These are some of the hurdles that the engineer trained in air conditioning must overcome if he is to successfully design commercial refrigeration systems. On the other hand, however, there are many applications of refrigeration in which the air conditioning engineer's greater experience in air handling equipment and practices will stand him in good stead.

For instance, this is true in the design of customers' sales rooms in packing houses, cutting rooms in wholesale meat establishments, packaging rooms in supermarkets, egg candling areas in produce warehouses, or any other applications where personal comfort of individuals normally present in the refrigerated areas must be considered along with product preservation.

* * *

Editor's Note: The writer feels that the many differences in the application of controls between air conditioning and refrigeration systems is too involved a subject to be included in this discussion. Consequently, this topic will be made the subject of a subsequent article in this department.

CHEESECAKE . . .

Continued from page 39

of a French fold one-month calendar. This again features a cheesecake painting, an inner page with his selling copy, and the calendar page, but as a new addition features a page of "dipsy doodles", which are laugh-provoking gags, collected from one source and another.

The messages follow the same general theme, always reminding the customer that though it may be cold and blustery in January when the first mailing piece is received, in a few short months it will be hot and sultry again, just as it was in past summers.

The smaller calendars, which occupy less space on the office wall, have shown an even greater response, Kiefer indicated. In August of 1955, experimenting with the smaller calendars, Kiefer came out with an exceptionally clever bit of copy when his message page showed a sweltering, open-collared individual at the top of the page and this copy below:

"IF — You are one of the many people who expected a moderate summer. "OR — You have kidded yourself into believing that air conditioning is just another expensive fad.

"OR — You have made yourself believe that air conditioning is not essential to your business.

"OR — You entertained the idea that air conditioning is injurious to health and that many people stay away from air conditioned places.

"IT IS OUR BET — That you have privately acknowledged that you were doing a lot of wishful thinking and believing.

"AND — That you frequently wished you had air conditioning right now, as well as during all of the hot days of the summer.

"IT IS NOT TOO LATE! — You can still get air conditioning installed for use in the hot days that are still to come.

"CERTAINLY — You will not permit another season to pass without having it installed in your place of business.

"CALL US NOW to have your installation made now or during the winter.

"BE READY for comfort and increased business next summer."

This particular bit of direct mail with its novel typographical arrangement of the sales message, brought in a lot of last-minute telephone calls and resulted in a September air conditioning installation volume which set new records for the firm.

Kiefer spends upwards of \$600 per year for his stock of direct mail pieces. This material is prepared for him by one of the county's largest specialists in "remembrance advertising".

At least once every year, Kiefer takes time off to make a tour of personal visits to every name on his direct mail list. The fact that he invariably finds his calendars hung on the walls of the various offices and establishments, plus the fact that check marks of one kind or another are often apparent by the Kiefer phone number, serves to renew his firmly established faith in the fact that this program really pays off.

DEALER COUNCIL SET UP BY MUELLER CLIMATROL

Formation of a Dealer Council by Mueller Climatrol, division of Worthington Corp., has been announced. The Council was designed to prove closer contact between the company and its dealerships and speed the transfer of ideas and opinions.

Eight dealers were selected from all over the country to obtain a variety of opinion. At their monthly meetings members will discuss specific product design problems, product trends, public relations for the dealer, product promotion, traffic, financing, sales and those subjects which are related to the heating and air conditioning industry.

The company will obtain current field information on short and long term industry trends.

A new group of dealers will be chosen every year.

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"FREEZE-DRYING" USED IN FOOD PRESERVATION

A new process of food preservation called "freeze-drying" has been reported on by scientists of Raytheon Mfg. Co., according to information from National Association of Refrigerated Warehouses. Foods preserved by this method can be stored at room temperatures in much the same way as canned goods, reports say.

The process consists of freezing the food first. It is then subjected (under a vacuum) to microwaves—similar to radar waves—which change the ice in the food directly from a solid to a vapor state without its passing through the liquid stage.

Beef, shrimp, and strawberries are reported to be among the commodities successfully preserved by this method in the laboratory. Soaking in water is all that's required to restore them to the "fresh" state.

Cost and moisture-proof packaging still are among the problems to be overcome to make the process commercially feasible.

In another report, Dr. Donald K. Tressler, technical director, Quartermaster Food and Container Institute, said that the Army would be purchasing hundreds of millions of pounds of "dehydro-frozen" foods within the next few years. This process differs from the freeze-drying process in that the foods are first dehydrated then frozen.

A third report, this one from the Interdepartmental Committee on Radiation Preservation of Foods, says that commercial production of "irradiated foods" may begin by 1960.

The committee which includes representatives from the Departments of the Army, State, Interior, Agriculture, Commerce, Health, Education & Welfare, and the Atomic Energy commission, says that 1960 is the year when wholesomeness and economic feasibility of irradiated foods will have been proven.

**BUY FROM YOUR
REFRIGERATION WHOLESALE**

NEW AIR CONDITIONING ASSOCIATION FORMED

At a recent meeting of the newly formed Boiler and Air Conditioning Manufacturers Association (BACMA), Fred R. Attwood of Spi-Rol-Fin Corp., was elected president and Gustav H. Koven of Waterfilm Boiler Co. and L. O. Koven Co., was elected vice president.

At the same meeting, M. C. Turpin, for many years executive secretary of the American Society of Refrigeration Engineers, was appointed executive secretary of the new association.

Representatives of the following companies attended: Penn Boiler & Burner Mfg. Corp.; Fostoria Pressed Steel Corp.; Patco Mfg.

CREDIT

Tyler S. Rogers, technical consultant for Owens-Corning Fiberglass Corp., was the author of the article on "Comfort Engineering" published on pages 83-85 of the July issue.

The article was based on a paper presented by Mr. Rogers at the 2nd Technical Conference of National Warm Air Heating & Air Conditioning Assn. Data presented were developed in the "Low Cost Comfort National Test Program" sponsored by Owens-Corning Fiberglass Corp.

Mr. Rogers' by-line was dropped unintentionally in making up the article.

Co.; Republic Products Co.; Waterfilm Boilers, Inc.; Spi-Rol-Fin Corp.; Edwards Engineering Corp.; and Percollash Mfg. Co.

Purpose of the new organization, its leaders explain, is to establish non-restrictive test codes and ratings for heating and air conditioning equipment where inadequate codes or no codes exist today. It is the intent of the association to publish monthly "Certified" ratings for use by the industry and appropriate governmental agencies.

Any manufacturer's equipment will be included in the monthly supplements upon payment of a normal listing fee whether or not the manufacturer is a member of the association.

Here's What One Hot Spell Did . . . LET'S HAVE MORE!



500 ROOM AIR CONDITIONERS piled high on the loading dock of George's Radio & TV appliance store in Washington, D.C., proves once again that nothing sells air conditioning like hot weather. Ordered from Mitchell Mfg. Co. in Chicago as a special "hot weather rush" shipment, all 500 units were on sale in Washington within 24 hours after the order was placed, according to Mike Filderman (center), executive vice president of George's. Millard Fleischer (left) and Joseph M. Zamoiski, sales manager and general manager, respectively, of Jos. M. Zamoiski Co., Mitchell's Washington distributor, pose with Filderman. Actually, only about one-fifth of the entire shipment is shown in this photo. So great was the demand for units of this type during the heat wave, Filderman reports, that some of them were sold right off the loading dock.

FILTER SERVICE . . .

Continued from page 71

Present day panel-type filters are classified into two basic types: the throwaway, and the cleanable (or washable). The throwaway type usually has a cardboard or fiber frame, with fiber glass or rubberized hair as the filtering media. The washable type usually has a metal frame, with plastic or metal media.

As their name implies, throwaway type filters cannot be laundered; they must be discarded when soiled. In servicing this type of filter, the dealer may have to carry a sizeable inventory of at least the most commonly used sizes. While this may involve a fairly large investment at the outset, once the dealer gets his servicing program under way his turnover should be fairly constant, so that this should not be too overwhelming a problem financially.

In setting up a filter service, however, the dealer may prefer to "sell" his customers on washable type filters. This would involve the customer purchasing two sets of filters, so that one set could be in use while the other set is being serviced. On his regular service rounds, the "dirty" set is simply picked up and the "laundered" set installed in its place.

How much volume the dealer might reasonably expect from a filter servicing operation would depend on a number of factors.

In the domestic market, he can expect to find from one to five filters in use in private homes. Commercially, from one to 200 filters each will be found in schools, hospitals, stores, restaurants, industrial plants, etc.

First step in arriving at the potential business would be to check in the yellow pages of the phone book, and with other local air conditioning and heating dealers, if he planned to operate the business on a "wholesale" basis. In some localities, data on the number of air conditioning units and warm air furnaces may be obtained through local gas and electric companies, or at the Chamber of Commerce.

From this survey, it is possible

to estimate the total number of prospective filters for cleaning. Most commercial filters are replaced approximately once a month, so the daily load can easily be determined.

Naturally, this load would be heavier if the dealer expanded his operation to include the replacement and cleaning of filters for other dealers' customers as well as his own. In this case he would supply clean filters to his dealer customers, and pick up and clean the filters that they collected.

Essentially, the service operation itself is a simple one — removing the dirty filters and re-

Shippers of air moving and conditioning equipment interested in securing lowest possible freight costs and reducing overcharge claims should write for a free copy of "Freight Classification Guide", published by the Air Moving and Conditioning Association.

Every basic type of device and component is illustrated and classified according to its applicable freight classification, as established by weight, and proper packing requirements.

Products described include all types of fans; ventilators; air conditioning units; air washers; converters; unit heaters; and parts such as cabinets, coils, dampers, blower and fan housings, machine guards, motors, shutters, propeller, and centrifugal wheels.

Inquirers should write AMCA, 2159 Guardian Bldg., Detroit 26, Mich., and ask for Bulletin 50.

placing them, if they are throwaway type, or cleaning and recharging them if they are washable type units.

The simplest method of cleaning washable-type filters is the use of wash and rinse tanks. First, the filters are allowed to soak for several minutes, and are then agitated in the cleaning solution and rinsed in hot, fresh water. Using suitable equipment of this type, one man can clean 15 to 20 filters per hour.

Tanks of this type will cost from \$80 to \$120, but if additional equipment is added, such as a recirculating pump, heat coils, etc., the cost for the unit will range from \$400 to \$600. One man with a tank equipped with this additional equipment can clean 40 or more

filters per hour. Still other types of equipment usable for cleaning are the immersion type dishwashers or steam guns.

Before the filters are coated with an adhesive, they should be allowed to dry. A common practice is to have the drying rack mounted on large wheels. The filters are removed from the cleaning tank and placed on this rack. They are then wheeled to the adhesive tanks.

For the best performance, a filter adhesive must be re-applied to the filter; the simplest and most effective method for this operation is a dip tank. A dip tank is similar to a wash tank with a drain board; the filter is first dipped and then drained. An alternative would be to spray the filter adhesive on with a paint spray gun. After either dipping or spraying, the filters are returned to the rack for draining, and to await delivery to the customer.

An adhesive dipping tank will cost from \$80 to \$100, and a paint spray outfit will range from \$100 on up. Racks for drying are usually 6' long, 4 filters high, and if constructed of wood, will cost in the neighborhood of \$30 to \$50 and will handle up to 120 — 2" filters.

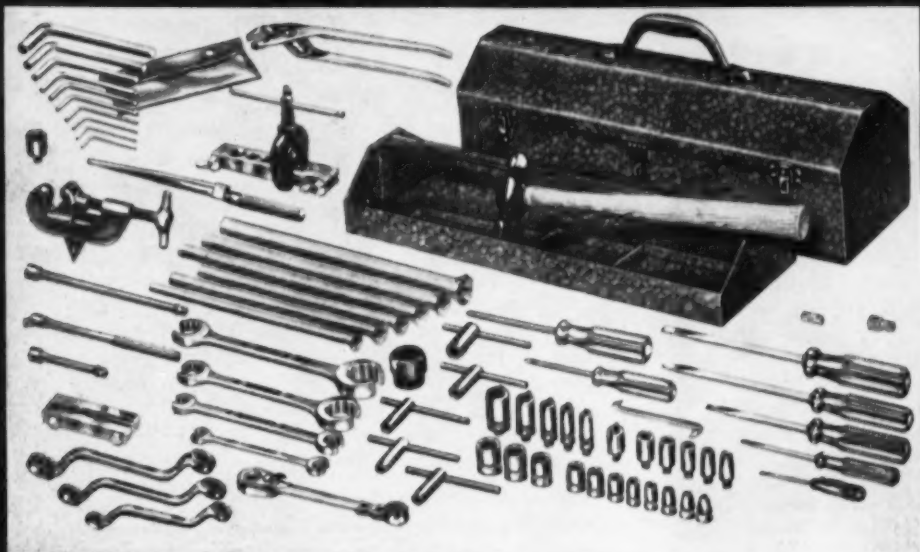
Several other types of services can be offered, and the charges for the service will vary with the type. Major factors affecting service charges are the number and weight of filters, the ease of getting filters in and out of the installation, the distance from the filter service laundry to the location of the filters, and the ownership of the filters.

The type and amount of equipment required for filter servicing will depend solely upon the volume of business anticipated. The basic equipment needed is a hot water heater or steam boiler, a source of soft water, washing and rinsing tanks, a draining board and drying racks, and a method of applying the filter adhesive. Also, a truck will be necessary if pick-up and delivery service is offered.

Some of the miscellaneous expense items which should be considered are water, heating the water, soap and detergents, and adhesives.

Water and heating the water will vary with locale and system

do all refrigeration jobs ...**FASTER, EASIER, BETTER!**



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With "Matched Set" Duro-Chrome Tools, every tool feels right. The natural grip and perfect balance make every tool seem "at home" in your hands . . . whether it's the Duro-Chrome Refrigeration Ratchet Wrench, Flare Nut Wrenches, Socket Sets, or any of the many other Duro-Chrome Tools specially designed for refrigeration service jobs. Your Wholesaler has them all. For the most Complete Line of Refrigeration Service Tools get *your* copy of the new Duro-Chrome Pocket Catalog that fits your pocket or your kit.

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*Also makers of
nationally advertised DURO Power Tools*

used. However, the water required for cleaning 600 filters is 550 gallons, and slightly less for rinsing. A gas hot water heater will produce 1,000 gallons for approximately \$1.

The amount of soap and detergent required will vary with the filter manufacturer's recommendations. Normally, 25 to 50 lbs. of soap or detergent per 500 gallons of water is used.

Approximately 3 to 4 oz. of adhesive will be used on a 20" x 20" x 2" filter at a cost of 2½ to 4¢ per filter.

As in any other business, the keeping of financial records and books is essential. The use of a dated card file is one simple method of maintaining an organized schedule for customers and area routings.

LEWIN-MATHES ACQUIRED BY CERRO DE PASCO

Cerro de Pasco Corp. has acquired the assets and business, subject to liabilities, of Lewin-Mathes Co., manufacturer of copper and brass tube, pipe and rod, with marketing facilities throughout the United States.

The acquisition was made in exchange for 303,918 shares of Cerro de Pasco common stock, thereby increasing the level of the corporation's common stock outstanding to 2,049,905 shares.

As a result of the transaction, Cerro de Pasco now has gross assets located in the United States aggregating some \$70,000,000, representing over one-third of all gross assets.

The newly acquired business will function as a division of the corporation under the name Lewin-Mathes Co., Division of Cerro de Pasco Corp.

PEERLESS PACIFIC NOW TYPHOON DISTRIBUTOR

Peerless Pacific Co., 2238 N. Interstate Ave., Portland, Ore., has been named wholesale distributor in that area for Typhoon Air Conditioning Co., Div. of Hupp Corp. The company has branch offices in Eugene, Ore. and Kennewick, Wash.

IT'S THE HUMIDITY . . .

Continued from page 75

Maximum total cooling and maximum percentage of sensible cooling are obtained by keeping by-pass dampers closed. With dampers closed, all air delivered to rooms passes through the coil at maximum velocity possible with the unit.

If air reaches the desired dry bulb temperature the thermostat stops both sensible cooling and moisture removal. Meanwhile moisture continues to build up, enhanced by re-evaporation of water from wet coil surfaces.

If the by-pass damper is opened, only part of the air passes through the coil, decreasing velocity, coil temperature and percentage of sensible cooling. This gives the dehumidifying process time to catch up with sensible cooling.

Reheating Also Helps

The by-pass damper may be set permanently when the sensible-latent ratio is fairly constant. Where it is variable, and precise control is required, the damper may be operated by a motor and humidity controller. When humidity rises above the controller setting the damper is opened, increasing the dehumidifying ratio and decreasing the sensible. As soon as humidity is reduced to the desired level the damper is closed and the system again placed under control of the dry bulb thermostat.

Where the humidity load is extremely high, or where a lower humidity must be maintained than is possible with the by-pass method, some form of reheating is commonly employed. Condenser water is probably the most economical way of returning sensible heat to the conditioned air, though any available heat source may be used.

It may seem senseless to reheat air which has just been cooled but the purpose is to keep the refrigerating unit in operation to dehumidify while returning enough heat to prevent undesirably low temperature.

**BUY FROM YOUR
REFRIGERATION WHOLESALE**

CARRIER EXPANDS UNIT HEATER PRODUCTION

A new production line for unit heaters now is in operation at the Syracuse, N. Y., plant of Carrier Corp. Complete facilities include a press shop, metal-cleaning and rust-proofing equipment, paint-spray booths, and ovens to provide a baked enamel finish on all unit heater lines.

It is reported that Carrier's unit heater sales through early 1957 were 27% ahead of last year.

AIRTEMP SCHEDULES NATIONAL CONFERENCE

A three-day national business conference, first of its type held by the company, has been scheduled by Airtemp Div. of Chrysler Corp. for Nov. 11-13 at the Edgewater Gulf Hotel, midway between Gulfport and Biloxi, Miss.

Including Airtemp cooling, heating and room air conditioner distributor officials, company executives, regional sales and engineering representatives, more than 400 people will participate in the conference, reports J. F. Knoff, vice president in charge of sales.

Conference agenda will include formal business sessions, a professionally staged product presentation program, a distributor-award banquet, and social activities. Time will also be allocated for business and franchise discussions with individual distributors.

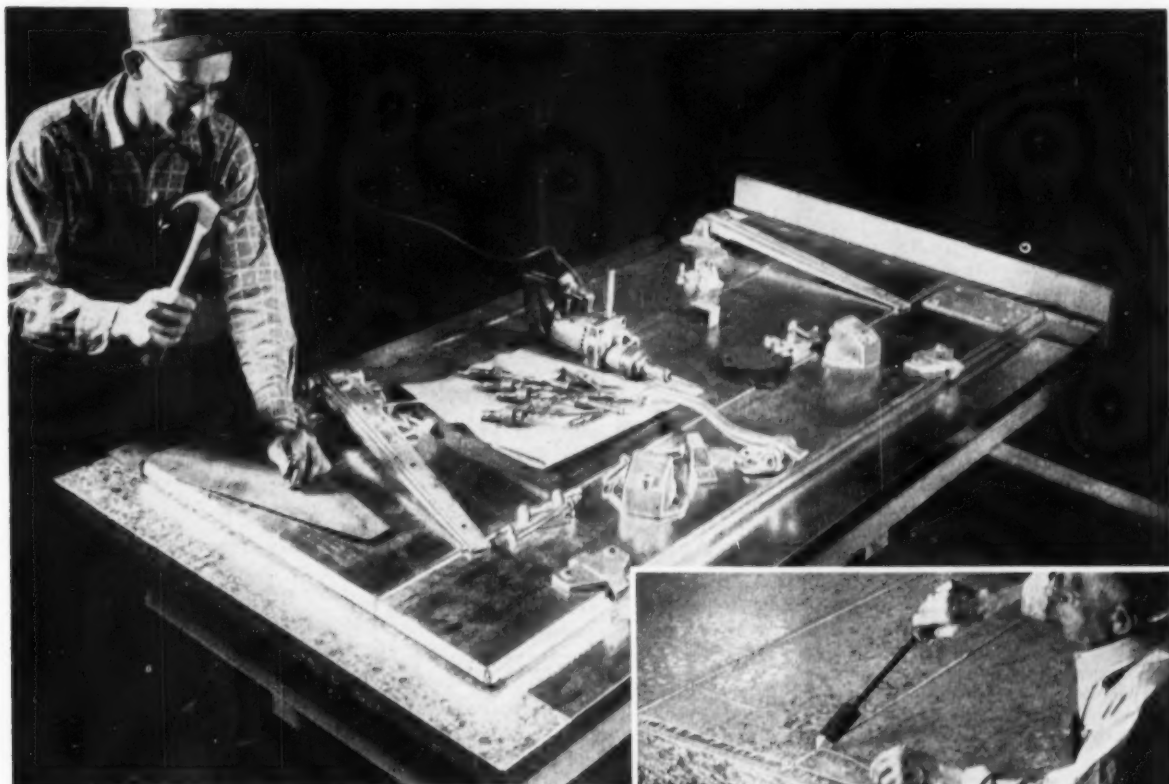
Knoff says the meeting will save much time for both distributors and field personnel by giving them the complete 1958 program simultaneously and in an effective, stimulating manner.

WOLVERINE OPENS 2 NEW MILL DEPOT FACILITIES

Wolverine Tube, Div. of Calumet & Hecla, Inc., has opened new offices and mill depot facilities in San Francisco. The firm also has opened new mill depot facilities in Cleveland.

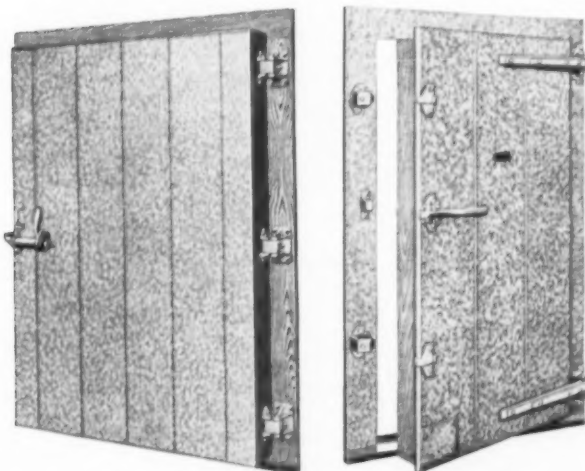
Van D. Clothier, Inc., far western agent for Wolverine, will be in charge of the San Francisco operation. The Cleveland facilities will be operated by Frank H. Grace & Co.

NEW Jamison **VAP-R-TYT*** feature gives metal clad doors full protection against moisture penetration



Sealed Penetrating Bolts. The bolts that attach hardware are completely sealed on the warm side.

Locked and Soldered Seams (right) also add to all-around protection.



All Jamison Super Freezer Doors (left) and Lo-Temp Doors (right) are furnished with Vap-r-tyt construction as standard equipment. Vap-r-tyt is also available as an extra on other metal clad doors.

*Vap-r-tyt is a Jamison trademark

Vap-r-tyt construction of locked and soldered seams is an exclusive Jamison feature. Vap-r-tyt adds longer life to cold storage doors by guarding against deterioration which invariably results when moisture condenses on the inside of the door.

For practical solutions to your door problems in low temperature storage, first get the facts from Jamison. Write to Jamison Cold Storage Door Co., Hagerstown, Md.



More JAMISON Doors are used by more people than any other Cold Storage Door in the world.

Circle No. 82 on Reader Service Card

Here's How

PROFITABLE SERVICE AND INSTALLATION PRACTICES

You Can't Afford To Ignore Machinery Isolation

Isolation of machinery is a necessity in a great many cases. It is not a luxury. If isolation is not required don't trouble with it; when it is required, do it properly. That's the down-to-earth installation advice offered by Worthington Corp. in one of its technical bulletins.

I DO IT THIS WAY

HERE is a service suggestion that we have been using for years. It has been our experience that many times the nearly inaccessible bearings on such equipment as room air conditioner fans, enclosed exhaust fans, and the fans and motors of store type air conditioners, do not get the periodic oiling that they need.

To correct this situation, we use the capillary tubes from old expansion valves as remote oiling tubes. We cut off the end of the bulb, sizing as to needed oil capacity, and then insert the remote end of the tubing into the oil holes provided for lubricating the bearings. We have found that with this arrangement the bearings usually receive the lubrication they need.

Art Janek
Madison, Wis.

Every machine by its very function of operation sets up a vibration or shock of varying intensity or amplitude. Air conditioning and refrigeration equipment is no exception, regardless of precision design and expert balance.

The requirements for isolating this vibration depends on the local conditions of installation. Acceptable vibration amplitudes in office buildings are much smaller than in manufacturing plants. Auditoriums, theatres, and hospitals may be much more critical than offices.

Two factors control the selection of an isolater for a particular machine. The first is the weight to

be supported; the second is the disturbing frequency of the machine. This disturbing frequency is the number of times a minute, C.P.M. (cycles per minute), or C.P.S. (cycles per second), that the vibration or shock occurs.

In refrigeration compressors the frequency depends on the speed of the compressor and the number of cylinders. In the case of a centrifugal fan the rotation of a relatively large shaft in its bearing does not create vibration of sufficient amplitude to be objectionable, but the passage of the fan blades by the outlet does set up vibration.

The design of an isolator, therefore, is an involved and highly technical process. The results from make-shift arrangements are problematical and frequently very costly. The responsibility for the design must be placed with a reputable manufacturer of isolation equipment. Once an effective isolation base is designed and tested in hundreds of actual installations, it becomes a simple matter of pro-



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It's easy as rolling off a log, and a lot more profitable. Just tell us, in your own words, some of the shortcuts you've developed to make a tough job easier . . . or cheaper. Enclose a rough sketch, if that will explain your idea, and drop it in the mail to Here's How Editor, Commercial Refrigeration and Air Conditioning. If he thinks your suggestion has merit, he'll publish it in this magazine and a check for \$5 will be on its way to you. So sharpen your pencil, roll up your sleeves and cash in today.

duction methods to assure constant uniform efficiency at the lowest possible cost.

It is the basic concept of machinery isolation that all calculations are made on the assumption that the supporting construction or

I DO IT THIS WAY

PULLEYS IN LINE

PULLEYS OUT OF LINE

WHENEVER a set of belts is replaced due to side wear, it generally can be determined that this wear has been caused by pulleys that are not in line. One extremely simple way of lining up pulleys is indicated in the diagrams below. Simply take a piece of string of the necessary length and hold it tightly against the face of the two pulleys at points A. Then adjust the relationship of the motor and compressor until the string also touches both pulley faces at points B. The pulleys then are in perfect alignment.

George R. Hendrickson
No. Arlington, N.J.

floor is rigid. If the floor or bay where the machine is installed will deflect under the static load of the machine, the efficiency of the isolation decreases in direct proportion to the point where the isolation may be no softer than the floor and a resulting condition of resonance may develop.

Under such conditions the isolation may even aggravate the vibration transmission. If there is any doubt as to the type of struc-

INSTALL RANCO CONTROLS

...to be sure

If an *exact* Ranco replacement control is installed, you're sure of a proper fit and long performance. That's why many servicemen rely on Ranco and use the *Ranco Replacement*

Reference manual (No. 1660) as a guide. Lists over 5,000 Ranco control uses—largest line in the industry—by specific installation. Buy your copy from your *Ranco Wholesaler* today.

(Not available from factory)



A10-518

HOUSEHOLD CONTROLS

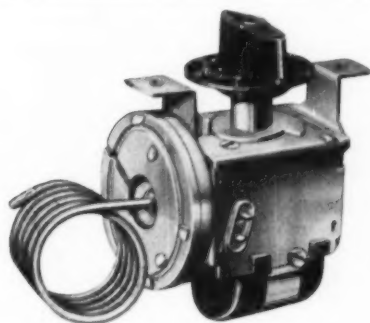
Ranco builds replacement controls that help simplify your household refrigeration installations.



010-1408

COMMERCIAL CONTROLS

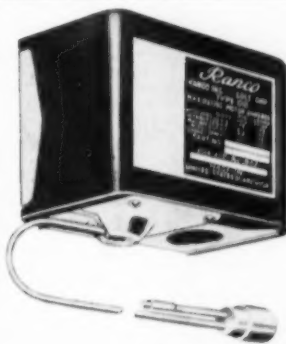
You'll find them in the Ranco commercial line—for beverage, milk, beer and ice cream coolers, water coolers, freezer cabinets, display cases, ice makers, blower coils, etc.



A13-110

AIR CONDITIONING CONTROLS

Ranco's air conditioning controls, with narrow differentials are designed to accommodate many installations.



018-100

ICE BANK CONTROL

This specialized Ranco control was developed to control the amount of ice made inside some milk cooler cabinets.



012-1594

DUAL PRESSURE CONTROL

For Air Conditioning systems this Ranco commercial control features a high pressure cut-out with non-adjustable high pressure limit stop, low pressure safety cut-out and a manual reset arm for both the high and low pressure cut-out.



016-107

HIGH-RATED PRESSURE, TEMPERATURE CONTROLS

Accommodate higher electrical ratings on some commercial equipment. Switches open or close on rise of temperature or pressure. Pressure ranges: 5 to 360 psi. Temperature ranges: -30° to 105°.

World's Largest Manufacturer
of Refrigeration Controls



Ranco Inc.
COLUMBUS 1, OHIO

Circle No. 83 on Reader Service Card

ture where the machine is to be installed, the manufacturer should be contacted for recommendations. Reinforcing of the structure may be recommended or it may be that the machines should be relocated directly over a beam or column.

For any type of resilient mounting to be effective, all piping connections must be flexible. If sufficient flexibility cannot be obtained in the lines themselves, then flexible metal hose should be used in the lines. All flexible connections should be installed as close to the compressor as possible and they must not be under tension or strain.

Piping ahead of flexible connection on a compressor or condensing unit should be braced securely to the unit and the piping immediately beyond the flexible connection should be anchored to the building structure.

REVCOR DOUBLES PRODUCTION FACILITIES

Revcor, Inc., Carpentersville, Ill., manufacturers of blower wheels, blades and housings, announced that 18,000 sq ft of manufacturing space is being added to its present plant. This expansion will double Revcor's manufacturing facilities and will house engineering offices, research and testing facilities, as well as production line equipment.

This is the second time in the past four years the firm has decided to double its facilities.

REMINGTON NAMES FOUR SALES REPRESENTATIVES

New representative appointments have been announced by Remington Air Conditioning Div. as follows:

Ray Warrell & Co., Cincinnati, covering Kentucky, southern Indiana, southwestern Ohio and western West Virginia; Don H. McQuarrie, Havertown, Pa., covering southern New Jersey, eastern Pennsylvania, Delaware, Maryland, and District of Columbia; C. W. Lehner Co., Atlanta, covering Georgia, Alabama, and eastern Tennessee; and John R. Vogt, Cazenovia, N. Y., covering upstate New York.

BOOSTER PUMPS...

Continued from page 69

basement floor, and forced by the two primary circulating pumps into the three refrigeration machines. The water is cooled here and pumped into a common chilled water supply header for distribution throughout the entire building. Two lines carry the chilled water directly from the header to cooling zones on lower floor levels.

A third line of 3" pipe conveys the chilled water to the penthouse cooling coils. It is at the bottom of this line that the booster pump is used to increase the water pressure.

The pump was mounted on a 6'-high concrete base taking up an area of less than 3 sq. ft. It was installed well out of the way, about 4' below the header. A new 3" line was welded into the header and connected to the suction side of the booster pump. A discharge line was reconnected to the penthouse line a few feet above the header.

Bypass Aids Maintenance

Instead of passing through the line which rose directly from the header to the penthouse coils, the water is now drawn through the booster pump for added lift, and then returned to the line.

Chilled water from the booster pump passes through the four cooling zones in the penthouse, and from here conditioned air is furnished throughout the rest of the building. The coolant is then returned to the storage tank for re-use.

Although the booster pump has been operating for a year without any maintenance, the installing engineer has prepared for any possible emergency. In event the pump does require maintenance, the bank can make repairs without shutting off its air conditioning system by opening a bypass valve at the header and closing specially added suction and discharge valves in the booster pump lines.

On an average, the pump is run continuously during the bank's air conditioning season for periods of 12 to 16 hours a day.

CAR COOLING PACES COMPRESSOR GAINS

Manufacturers' shipments of compressor bodies designed for use in automotive air-conditioning during the first quarter of 1957 almost doubled the figure for the same period of 1956.

In the first three months of this year, total shipments of automotive compressor bodies amounted to 159,732 units, compared with 86,865 units in the first quarter of 1956 and 284,022 for the entire year 1956.

Shipments of all types of compressor bodies used in air-conditioning and refrigeration units (except household refrigerators and compressors designed for ammonia refrigerant) were up about 4% in the first quarter.

Actual shipments for the three-month period totaled 1,392,854 units, compared with 1,344,393 in the first quarter of last year.

Of the 1957 quarterly total, 91.3% of all non-automotive compressor bodies were sold as such, or in compressors or condensing units. The remainder, 8.7%, were sold in unitary end-use products, such as room or self-contained air-conditioners, display cases, food freezers, or commercial refrigerators.

Other manufacturers purchased 87.4% of the total output, with 12.6% going to non-manufacturers, distributors, jobbers, dealers, and retail customers.

MANUFACTURERS' SHIPMENTS OF COMPRESSOR BODIES

(Except for household refrigerators)

HORSEPOWER, INCLUDING EXPORTS	SHIPMENTS	
	March 1957	Jan.-March 1957
1/5 HP & Under	53,712	125,913
1/4 HP	81,456	206,873
1/3 HP	25,494	58,167
1/2 HP	8,887	25,469
3/4 HP	45,732	169,054
1 HP	161,333	364,353
1 1/2 HP	39,891	113,614
2 HP	37,239	96,644
3 HP	11,590	28,921
5 HP	8,710	23,018
7 1/2 HP	6,036	14,307
10 HP	1,198	3,128
15 HP	381	905
20 HP	246	631
25 HP	175	494
30 HP & Over	599	1,641
Total	482,679	1,233,132
For Ammonia Refrigerant—TOTAL	126	369
For Automotive Air-Cond.—TOTAL	53,924	159,732
GRAND TOTAL	536,729	1,393,233

10TH INDUSTRY SHOW SEEN AS SELLOUT

Sellout of the 100,000 sq ft of display space reserved in Chicago's International Amphitheatre for exhibitors at the 10th Exposition of the Air-Conditioning and Refrigeration Industry, scheduled for November 18-21, is virtually assured, according to the latest report from George E. Mills, show director of Air-Conditioning and Refrigeration Institute, the sponsoring organization.

Plans of various industry associations and technical societies, dovetailing with plans for the exposition itself, indicate that Chicago will be virtually the capital

BOOK REVIEW

Title: Pump Selection and Application, 432 pages.

Author: Tyler G. Hicks

Published: McGraw-Hill Book Co., Inc., New York, N. Y.

Price: \$8.50.

Book describes how to get more economy and efficiency from pump applications in heating and air conditioning installations. Basic types of pumps and problems met in their application are discussed.

Step-by-step procedures for analyzing pumping problems are studied. Many illustrative examples are included.

Other topics examined are pumping systems, economic analyses, pump specifications, comprehensive analyses of pumping requirements, discussions of pump head, liquid handled.

The entire field of industrial pumping actually is covered—from tiny units handling just a trickle to giants pumping hundreds of thousands of gpm.

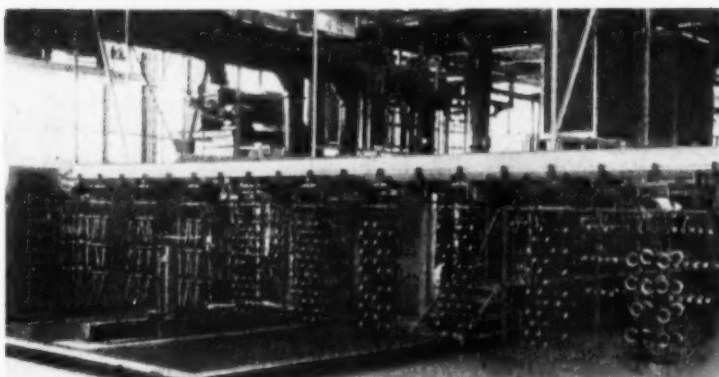
of the refrigeration and air conditioning world during the show period.

ARI's show committee met in Chicago in late June to further plans for the industry-wide exposition, and at least one more pre-show meeting will be held at Miami Beach August 23 and 24.

The continuing influx of booth reservations, according to Mills, seems to assure the fact that this 10th Exposition will be not only the largest but also the most comprehensive, as far as variety of products is concerned, in the industry's history.

R. H. Israel, chairman of ARI's

THIS MACHINE AUTOMATICALLY PLATES TOOLS



COMPLETELY AUTOMATIC plating machine is only one of many new machines used at new Alliance, Ohio, plant of Bonney Forge & Tool Works. Tools to be plated are placed on special racks which are conveyed and transferred to main conveyor where they undergo a cleaning process. Next, they receive a nickel plating followed by a chromium plating. In the last step, racks are transferred again back onto the original conveyor in an uninterrupted sequence.

show committee, has announced that free bus service will be provided between Loop hotels and the Amphitheatre on a definite schedule. This service will be made available through courtesy of Jas. P. Marsh Corp.

Among the industry groups planning to hold meetings in conjunction with the Show are the Air-Conditioning and Refrigeration Wholesalers, American Society of Refrigerating Engineers, National Commercial Refrigerator Sales Association, National Warm Air Heating and Air Conditioning Association, and Refrigeration Service Engineers Society.

DUC-PAC LICENSES IOWA MANUFACTURER

Duc-Pac, Inc., has licensed Christians Sheet Metal Works, Spencer, Iowa, to manufacture Duc-Pac trunk and stack duct.

Christians has been licensed to make only the heavier units. The Duc-Pac plant in East Longmeadow, Mass. will supply the packaged fittings to Christians who will, in turn, distribute the complete Duc-Pac line to jobbers for resale to the trade in the Iowa area.

Earlier this year, Duc-Pac licensed Aero Tool Works, of Toronto, under a similar plan.

SEALED UNIT EXPANDS REBUILDING SERVICE

After more than 10 years experience in rebuilding hermetic motor-compressors and reselling them through refrigeration and air conditioning wholesalers, Sealed Units Parts Co. is now rendering in-warranty rebuilding service for manufacturers also, according to Sidney Weiner, vice president.

Sealed Unit Parts is now planning to open and expand its rebuilding department, since existing facilities are inadequate for the volume of work.

Copies of the large 22" x 29" Replacement Sealed Unit Compressor Guides are still available from the company without cost, Weiner said. The address is 261 E. 161 St. New York 51, N. Y.

NEW REFINERY SOON FOR READING METALS

Reading Metals Refining Corp., a subsidiary of Reading Tube Corp., soon will begin operations in a new copper refinery in Ontelaunee Township, Pa.

The new refinery, presently approximating 100,000 sq ft is located on a 16-acre developed site. An additional 79 acres are available for future expansion. In its present form the refinery represents an investment of approximately \$4,000,000.

**BUY FROM YOUR
REFRIGERATION WHOLESALER**

LOUSY SALESMEN? . . .

Continued from page 78

While no one of this marginal element of the industry is in himself a major factor, collectively the amount of work they sell and install is tremendous, and it is these people who set the average selling price of the installation. While it is perfectly true that a good salesman can get a premium above the price set by this class of operator, this premium is not unlimited and a 5% to 10% premium is usually not sufficient to pay for the added quality of a properly engineered job, together with the overhead of a proper business organization.

Now I would like to cease haranguing the manufacturers for their share of blame in contributing to a condition which we all admit exists, and turn to some other point in Mr. Self's article.

Short on Business Know-How

He asks the question "why are air conditioning engineers and refrigeration men usually not too good as salesmen?", and then proceeds to answer it by saying that ordinarily they do not come from a selling background. They are generally mechanically inclined people. I would like to paraphrase that question and ask "why are air conditioning engineers and refrigeration men usually not too good as businessmen?", and then paraphrase the answer and state that ordinarily they do not come from a business background.

Many of the administrators of contracting organizations throughout the country are people who were formerly salesmen, mechanics, or engineers, which in itself is highly admirable. Many of them, however, because of former training, and exemplary ability in that portion of the industry, are still bogged down by thinking in the terms of engineers and mechanics rather than taking the large scope view of management and concerning themselves with proper administration of an organization and the large and real problem of getting a fair return on their investment.

The average "administrator" of this type is still more interested in a wiring diagram than an organizational diagram. He still pays more attention to a heat load estimate than a business trend estimate. He will spend a considerable amount of time on an improved heat pump system and practically none at all

on an improved business system. A logarithm table has greater significance to him than an interest table and the dollar sign places a poor second to the square root sign.

This writer believes that a lack of proper business knowledge is a contributing cause to the conditions in our industry.

We can put in fine air conditioning systems. We can design and install air conditioning systems that are monuments. If the occupancy of a given space were increased 10%, probably everyone reading this article could predict the percentage that a load would increase, the new suction and condensing tempera-



tures, and the increase in compressor brake horsepower.

These are admirable things to know, and this is part of being an engineer — that noble profession that, with the help of God, has achieved such wonders for mankind. But how many of the readers of this article could, with the same degree of certainty, predict the per cent of increase in overhead with a 10% increase in volume, or how much more money you might have made last year if you had handled only 75% of the business you did but handled it at a 10% higher mark-up?

The problem of sufficient competent sales personnel is a very real problem. It is this writer's opinion that desire for air conditioning systems is strong and the number of sales personnel available is limited. Therefore, very little time is spent in the creative selling of convincing a potential customer that he should have air conditioning. Most of the sales people in our tropical area in South Florida devote their time in selling their particular brand of air conditioning to people who are

definite buyers.

This is not a one-call business, however, (although there are occasional exceptions) and the time required to make surveys, select equipment, prepare estimates, and follow-up in the actual selling of the job, is rather lengthy. With the existing mark-up situation, the commission that can be paid to the salesman is not commensurate with the time and knowledge that he must have, creating an unattractive condition for recruiting sales personnel.

The foregoing states a series of problems but no solution for them. Basically, the solution can be summed up in one word. That one word, is education — education of the manufacturer regarding the contractor's problem, education of the contractor in operating a business, education of salesmen in properly handling the rapidly expanding market, and education of the public as to what should be expected from a system and how they can obtain it.

ARMAND COWAN

President

Stuart Cooling Corp. of Florida
Miami, Fla.

FOGEL COMPLETES NEW MANUFACTURING PLANT

Fogel Refrigerator Co. of Philadelphia, has announced the completion of a new one-story manufacturing building of 55,000 sq ft. This increases its total manufacturing area to one quarter million sq ft covering a three-block area.

The new building houses a metal fabricating shop and ultra-modern baking and finishing facilities.

The new building has a siding which actually runs inside the building itself. This will make for quick loading and unloading in any weather. This completes an accelerated plant building and modernization program which gives the company up-to-the-minute, straight-line production and assembly facilities all on one level.

CARNES FIRMS ARE SOLD

Carnes Corp. and W. R. Carnes Co., Inc. of Verona, Wis., leading manufacturers of air distribution outlets and ventilating equipment for the air conditioning industry, have been sold to Dings Magnetic Separator Co., Milwaukee, Wis.

ARI PREPARES NEW HEAT PUMP STANDARD

A new ARI standard covering both heating and cooling cycles of unitary heat pumps is in process of preparation under the direction of a special heat-pump subcommittee of the engineering committee of the Self-Contained and Residential Air-Conditioner Section of Air-Conditioning and Refrigeration Institute.

The subcommittee held its first meeting at ARI headquarters in Washington in June and worked over an initial draft of the proposed standard. The group was set up to meet the increasing need for such a standard in view of the interest expressed by government agencies and others.

Present at the meeting were W. L. McGrath of Carrier Corp., chairman of the subcommittee; G. L. Biehn, Westinghouse Electric Corp.; R. P. Cook, Typhoon Heat Pump Co., Div. of Hupp Corp.; A. E. Diehl, York Div., Borg-Warner Corp.; D. W. Lynch, General Electric Co., and R. H. Stebbings, Westinghouse Electric Corp.

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last and always
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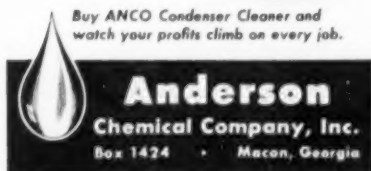
ANCO condenser cleaner is completely safe to use. It won't burn workmen's skin and it is harmless to metals. Yet it does a fast, effective job of removing the heaviest scale while equipment is operating.

Economical and simple to use

Scale and rust are removed quickly and easily with ANCO Condenser Cleaner. Simply add it to the sump. Important, too, it costs less to use than many other brands.



Buy ANCO Condenser Cleaner and watch your profits climb on every job.



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Rates: for "Positions Wanted," \$4.50 minimum, limit 25 words. For all other classifications, \$4.00 minimum for 25 words or under, each additional word 20¢. Boldface type or all capitals, \$10.00 minimum for 25 words or under, each additional word 25¢. All classified advertising payable in advance.

POSITIONS AVAILABLE

REFRIGERATION MECHANIC — Middle aged man. Must be thoroughly experienced on all types of ammonia machines and equipment. Must be willing to locate in Baltimore-Washington territory. Give experience and complete details in letter of application. Apply Box No. 8157, COMMERCIAL REFRIGERATION & AIR CONDITIONING.

FLEXONICS TO BUILD CALIFORNIA PLANT

Flexonics Corp., Maywood, Ill., will build a new plant on a 10-acre site at Santa Ana, Calif.

Construction is expected to begin shortly on an initial building of 25,000 sq. ft. The plant will house special production for aircraft, rocket and missile industries besides assembly of industrial products and stocking of Flexonics' full product line for West Coast markets.

Flexonics western regional office will move to the Santa Ana plant as soon as the facility is completed.

FRIGIDAIRE SERVICE SCHOOL NETWORK GROWS

Frigidaire has reported "substantial progress" in its plan to open permanent appliance and air conditioning dealer service schools within General Motors' network of training centers across the country.

Frigidaire service training units now are operating in one out of every three GM centers, according to Herman F. Lehman, General Motors vice president and division general manager in Dayton.

Complete dealer training facilities are scheduled to be installed in each of General Motors 30 regional centers within a year.

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**HIGHEST
VALUE
AT
LOWEST COST**

FREE SWIVELING—will not kink hose while tightening.
FINGER-GRIP—precision machined knurled nut for easier handling.
ALL BRASS barb and ferrule for positive seal.
TUBULAR GASKET—impervious to common refrigerants. Won't pop out.
1/4" SAE FLARE CONNECTION
Specify Madden to your Wholesaler

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**WITT Air Cooled
Condensers**

for SINGLE OR MULTIPLE
COMPRESSOR INSTALLATION

and NO WATER REQUIRED SIMPLE AUTOMATIC CONTROL SYSTEM FOR WINTER OPERATION

WITT offers a simple, low price method of keeping head pressure sufficiently high in extremely low temperatures. This applies even where a multiplicity of condensing units are connected to one condenser.

Where water supply is taxed or limited, drainage facilities inadequate or water corrodes water cooled condensers, the sensible answer to your air conditioning or refrigeration condensing problem is a WITT AIR COOLED CONDENSER.

Same units are applicable for indoor or outdoor installation. Available in two to 25 ton capacities or multiples thereof.

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WITT Coils

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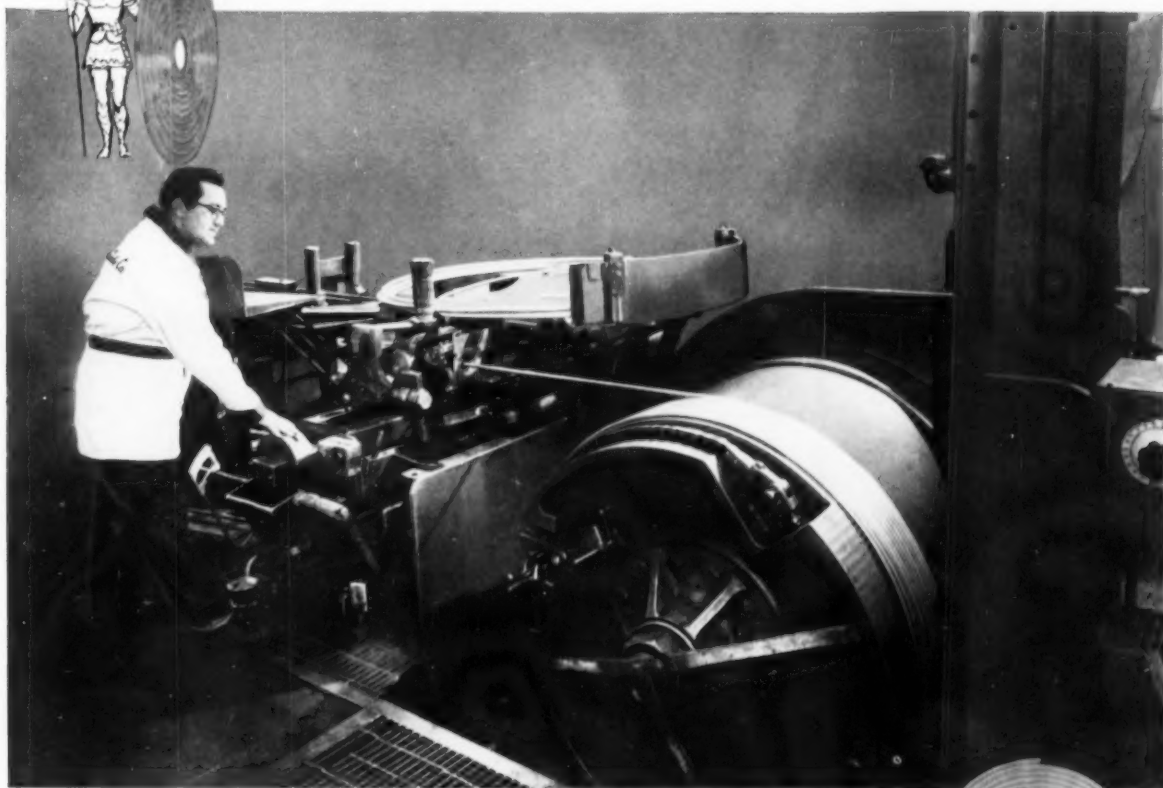
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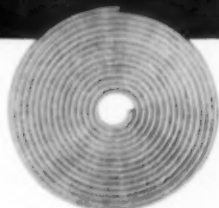


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the difference in **VIKING** is

The "ENGLISH BULL" that draws to **PERFECTION**



To maintain the most rigid standards of precision and uniformity in drawing copper tubing, VIKING uses two 100-horsepower special made Bull Blocks imported from England — each with a capacity for drawing 1500 feet per minute continuous coils up to 1,000 ft. in length. A single "joystick" controls all machine operations, i.e. slow start, smooth acceleration, automatic stop and automatic re-positioning of die head.

To insure careful and efficient handling, a specially de-

signed conveyor system, block loader and unloader move coils to and from the block.

The "Bull Block" is another illustration of how VIKING copper tubing is achieving higher quality, greater uniformity and dependability of service. It is "differences" such as these that are creating VIKING's increasing acceptance by the manufacturers of air-conditioning units and coils.

VIKING copper tubing continues to be the result of the combined efforts of skilled craftsmen seeking always to create a tubing that will do the job better, faster and at lowest cost.



VIKING COPPER TUBE CO.

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EXTRA STRENGTH

The proper kind of strength and ductility is vital in tubing used for refrigeration and air conditioning purposes. VIKING copper tubing possesses these properties to a far greater degree than other types of tubing. Its temper assures flawless fabrication.

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Viking Copper Tube is soft and pliable, yet exceedingly rugged. It saves time and labor because it can be coiled, formed, flared and expanded quickly without danger of fracturing or splitting.

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An electronic "Brain" detects the minutest flaw or imperfection in the walls of VIKING tubing . . . automatically discarding defective tubing. Trouble-free fabrication is virtually guaranteed — operational failures almost completely eliminated.

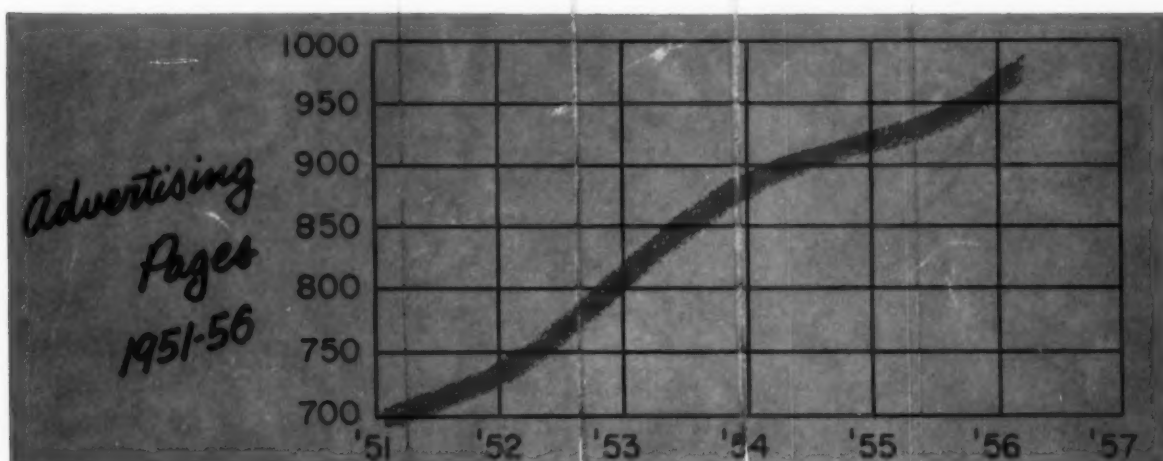
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"CRAC", the full-time merchandiser, reports:

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